

# **Application Description**

**Hot Water Heating** 

**Domestic Hot Water Control** 

## Summary:

This document is a part of the HVAC Application Interworking Standard for Hot Water Heating applications. This chapter describes the Functional Blocks for Domestic Hot Water Control

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	2001.09.12	BKY, document created from HWHFuncBlocV20 => document split-up into multiple chapters Functional block diagrams and DP overview updated
0.2	2001.09.27	BKY, detailed DP descriptions added
0.3	2001.12.21	BKY, inclusion of general TFI decisions (editorial); Modified Standard Mode interface (basic FB) according to TFI decisions; additional 2 <sup>nd</sup> DHWZone binding group in DHWSM: link with DHWS; TempDHWSetpEff added in DHWSM, DHWZC; New chapter 2.1.5 circulation pump control; Data interface of DHWCPC updated; introduction of DHWCPS scheduler
		new: Specification of DHWTS, COLTS, UDHWSET => release for TFI assessment
0.4	2002.02.22	BKY, editorial corrections; missing DPT added; 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	2002.11.29	BKY, editorial corrections; correction timeout of StatusHPM input, change of MinRepTime for DHWModeUser, DHWModeUserEff, DHWModeEff, DHWPushUser, TempDHWSetpUser, DHWCPCPush, DHWOtherEnergySource.
1.1	2003.08.25	signal DHWModeUserEff added in DHWSM and UDHWSET
1.1	2004.01.08	DHWSM: no timeout for DHWModeUser and TempDHWSetpUser inputs (LTE and S-Mode).
		UDHWSET: heartbeat repetition is optional for DHWModeUser and TempDHWSetpUser outputs (LTE and S-Mode) TFI approved, updated for KNX Handbook 1.1
1.2	2006.01.12	[BKY]: DHWC inclusion of new attribute DHWLegioReq in DPT_TempFlowWaterDemAbs (210.100)
1.2	2009.06.17	Update in view of publication in the KNX Specifications v2.0.
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# References

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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 Domestic Hot Water Control.

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

Functional Blocks specification for applications VAC [13], terminal units (TU) [12] and direct electric heating (DEH) [11] 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 documents [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 [14]).

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 <sub>b</sub> )		(GO)	О
Outputs	Outp1	NA	NA	NA	M
	- Outp1-1	$GO_b$	GO	GO	NA
	- Outp1-2	$GO_b$	GO	GO	NA
	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<sub>b</sub>). 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**<sup>used</sup> = **IO Type**<sup>HVAC-LTE</sup>
  - ⇒ 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<sup>used</sup> = IO Type<sup>standardDPT</sup> = IO Type<sup>HVAC-LTE</sup> + 10000d (e.g. BUC<sup>HVAC-LTE</sup> = 128 => BUC<sup>standardDPT</sup> = 10128)
  - ⇒ It is allowed to implement in a device both Interface Object Types IO Type<sup>HVAC-LTE</sup> and IO Type<sup>standardDPT</sup>. The implementation of parameters and diagnostic data of one given Functional Block shall however be complete. It is thus not allowed to implement part of the datapoints of a Functional Block in IO Type<sup>standardDPT</sup> and the remaining in IO Type<sup>HVACLTE</sup>.

	Implementation of Parameter and Diagnostic Data				
	Proper	ty based	Group Object	Memory mapped	
	HVAC-LTE style	Standard DPT			
IO Type	IO Type <sup>HVAC-LTE</sup> e.g. BUC=128	IO Type <sup>HVAC-LTE</sup> + 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].

#### **Abbreviations** 1.4

### **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

WHPC

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

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

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

#### **Description Abbreviation**

**CFWTS** Condensor Flow Temperature Sensor

Condensor Retrun Water Temperature Sensor **CRNWTS** 

Water Heat Pump Control

**DPS Dew Point Status Sensor** 

Flow Water Temperature Sensor **FWTS** 

**HVAC** Valve HVA OAD Outside Air Damper

Outside Relative Humidity Sensor **ORHS** OAOS Outside Air Quality Sensor Outside Air Temperature Sensor OTS

Presence Detector **PRD** 

Room Relative Humidity Sensor **RRHS** 

Room Air Quality Sensor **RAOS** 

**RNARHS** Return Air Relative Humidity Sensor

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

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

Room Temperature Sensor RTS

Supply Air Relative Humidity Sensor **SARHS** 

Supply Air Quality Sensor **SAOS** Supply Air Temperature Sensor **SATS** 

Sun Intensity Sensor SIS

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

**URHSS** Air Relative Humidity Setpoint Setting

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

Water Change over Status Sensor **WCOS** 

Window Switch WOS WSS Wind Speed Sensor

### General

Abbreviation	Description
cs	Company specific
NA	not allowed / not available
LTE	Logical Tag Extended Mode, see [14] 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: Domestic Hot Water Control

# 2.1 Aims and Objectives

# 2.1.1 DHW control system

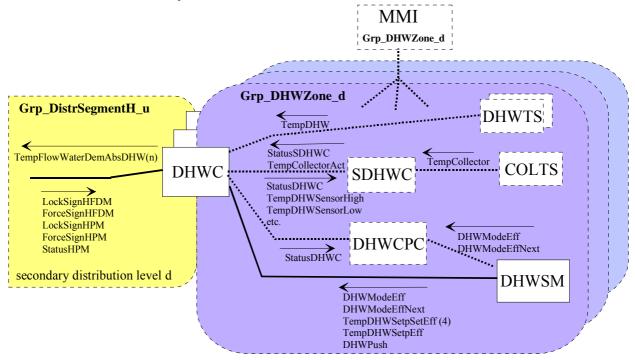


Figure 1 DHW Control system (simplified)

Functional Blocks: DHWC: Domestic Hot Water Controller SDHWC: Solar Domestic Hot Water Controller

DHWSM: DHW Setpoint Manager
DHWCPC: DHW Circulation Pump Controller
MMI: Man Machine Interface
DHWTS: DHW Temperature Sensor
COLTS: Collector Temperature Sensor
DHW circulation pump

The diagram above shows a sophisticated DHW application and the related functional blocks including solar DHW preparation and optimized circulation pump control. The DHW control system is composed of multiple functional blocks (some functional blocks are optional). Usually all of these functional blocks – except DHWSM or SDHWC - are located in the same device.

Additional electrical DHW load (e.g. during summer time) is possible and supported by the DHWC but the corresponding functional block is not part of this specification.

#### **Domestic hotwater control:**

A Domestic Hot Water circuit is controlled by a DHW Controller (DHWC) according to the current hot water temperature setpoint. The DHW setpoint depends on the actual DHW operating mode 'DHWModeEff' and a set of DHW temperature setpoints 'TempDHWSetpSetEff(4)', each corresponding to one of the DHW operating modes. These information are inputs for the DHWC which are provided by the DHW Setpoint Manager (DHWSM). The DHW operating mode from DHWSM may depend on automatic time schedule or user operation (MMI).In simple systems the DHWSM only provides the actual setpoint 'TempDHWSetpEff' because 'DHWModeEff' and 'TempDHWSetpSetEff(4)' are not available

The current DHW temperature 'TempDHW' (normally a set of 2 different sensor values: DHW start/stop sensors) is also a mandatory for DHW control loop. DHW sensor(s) are usually hard-wired to the device containing the DHWC.

In more sophisticated systems the DHWC may incorporate <u>local</u> optimizer functionality like optimized start/stop of DHW load. In this case the optimizer will have influence on the DHW operating mode and the DHW temperature setpoint used internally by the DHWC. The local optimizer functions in the DHWC are company specific and not part of this specification. Usually optimizer functionality may depend on:

- 'DHWModeEff', the next DHW operating mode & time until change 'DHWModeEffNext' from DHWSM
- Status information from DHWC including actual DHW temperature
- DHW temp. setpoints

etc.

In addition the DHWC provides optional inputs for an external (central) "HVAC Optimizer" which may be located in a management station etc. See chapter 2.1.3

**Solar energy:** In solar energy supported DHW systems and additional Solar Domestic Hot Water Controller (SDHWC) is present. Usually SDHWC works autonomously, i.e. SDHWC provides as much energy as possible to the DHW storage tank. SDHWC control mechanisms are very manufacturer specific.

Conventional DHW load may be influenced by the availability of solar energy. Usually conventional DHW load by the DHWC is disabled, if sufficient solar energy is available (the DHWC decides depending on SDHW status information). The SDHWC provides the 'StatusSDHWC' containing information about availability of solar energy.

**DHW push:** If DHW temperature is below comfort level and DHW load is not activated due to the actual DHW operating mode, the user may still activate DHW load by the 'DHWPush' function. The 'DHWPush' signal is provided by the DHWSM after user operation and it forces the DHWC to load the DHW storage tank <u>once</u> to DHW comfort temperature level. DHW push is blocked by the DHWSM if DHW preparation is disabled, e.g. by a management station.

#### DHW heat demand:

The DHWC is connected to one Heat Distribution Segment and sends its heat demand to the corresponding HFDM which provides demand dependent hot water flow.

Out of the actual DHW temperature setpoint the DHWC calculates the corresponding flow temperature demand signal which is sent to the HFDM in the same Distribution Segment. The HFDM in the Heat Distribution Segment collects the heat demands from all connected DHW circuits (DHWC) and other consumers (e.g. HZC) and calculates the resulting heat demand (see [08])

DHW load often requires max. limitation of the flow temperature in the Distribution Segment to avoid calcification of the water heater. In this case the attribute "MaxTempLimit" will be set in the heat demand signal (TempFlowWaterDemAbsDHW).

With the 'EmergDem' attribute in the heat demand signal the DHWC can indicate an emergency heat demand e.g. for frost protection

DHW controls are often connected to the primary Distribution Segment or are located in a specific Distribution Segment.

#### DHW load management and priority:

Usually DHW control requests load priority by setting the corresponding attributes in the heat demand signal (TempFlowWaterDemAbsDHW)

- "absolute load priority": if DHW load requests all available power in the Distribution Segment
- "shifting load priority": DHW load has priority in case of boiler overload

Load priority between DHWC and other consumers is controlled by the HFDM according to priority attributes in the heat demand signals. If absolute load priority is requested by one or a class of consumers, the HFDM will send a locking signal to the consumers in the distribution segment. These locking signal must be handled in the DHW as well as locking signals due to boiler overload.

Forcing signal must also be handled by the DHWC. In case of boiler overheat, DHW load will usually be activated first.

For further information on forcing and locking signals: see also document [09].

#### Usage of status information from heat production:

The signal 'StatusHPM' is provided by the HPM / HFDM to inform consumers like DHWC e.g. if the heat production is on and is able do provide energy. This information is used in the DHWC e.g. in order to avoid unloading of the DHW storage tank if heat production is not ready.

#### **DHW** circulation pump:

DHW circulation pump is controlled by the functional block DHW circulation pump controller DHWCPC. The purpose of this functional block is to reduce runtime of the DHW circulation pump to a minimum.

The local mechanisms of DHWCPC are manufacturer specific. Usually the actual DHW operating mode, TempDHW, DHWPush etc. are used in order to decide whether the pump is on or off. Also a separate program from a DHW Circulation Pump Scheduler is possible. The circulation pump is normally hard wired but optionally also a bus-connected pump is possible.

#### **DHW Zoning:**

In LTE implementations of a DHW system all functional blocks used for DHW control are belonging to the specific group DWHZone. DHW zoning is completely independent of the building structure / geographical zones (e.g. one centralized DHW control for all apartments or individual DHW control for each apartment is possible).

DHWZone is used for the distribution of DHW scheduler, load management and remote-control/diagnostic data.

The LTE system supports up to 31 independent DHW Zones and one DHW-"Broadcast" address for all DHW Zones (LTE Wildcard addressing).

#### User Interface:

A user interface (MMI) can be used for remote management of the DHW control. It may also contain the DHW Setpoint Manager (DHWSM), DHW temperature setpoint adjustment etc. In LTE implementations this MMI must also be configured with the corresponding DHWZone

# 2.1.2 DHW Setpoint Management

Overview only: for more details see DHWSM in chapter 2.2

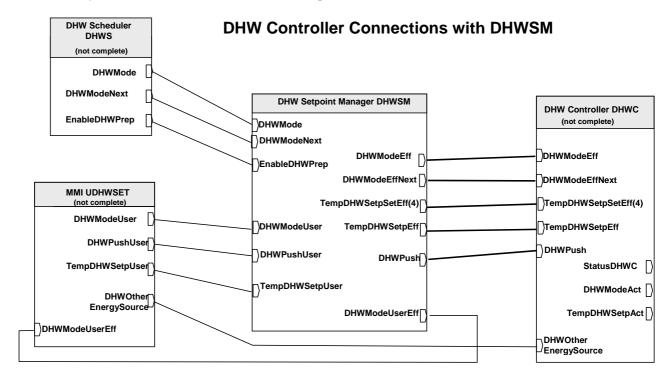


Figure 2 DHW Setpoint Management (simplified)

The separation of the DHW controller from DHWSM and "scheduling" allows much more flexibility for device design. The figure above shows the dependencies between the Functional Blocks

The DHWSM provides the active DHW mode (DHWModeEff), the scheduler-dependent next DHW mode and the time until change of mode (DHWModeEffNext) and a set of 4 DHW temperature setpoints, one for each DHW mode. In simple systems only the actual DHW setpoint 'TempDHWSetpEff' is provided.

The outputs of the DHWSM may depend on user interaction from an MMI, automatic scheduler program or interaction from a management station

The DHW Controller uses these signals from the DHWSM to calculate the actual DHW temperature setpoint.

The DHW Scheduler DHWS provides the current DHWMode and the next DHWMode (including the delay time until change of mode). DHWS is specified in [06].

From an MMI containing the functional Block UDHWSET automatic DHW scheduling can be overridden manually (signals DHWModeUser, DHWPushUser) and the DHW temperature setpoint can be modified (TempDHWSetpUser).

The DHW Setpoint Manager may provide the output signal DHWModeUserEff which contains the resulting user interaction on DHW Mode for feedback on the MMI. Manual override of DHWMode may be influenced besides by the signal DHWModeUser from an MMI also by other parameters (e.g. signal EnableDHWPrep or local settings on the device containing the DHWSM). It may therefore be necessary to give feedback to the MMI (UDHWSET) about the result of user interaction on DHW Mode.

## 2.1.3 External HVAC Optimizer

Overview only: for more details see [02], [03], [04], [05] and [06]

In more sophisticated systems the DHWC may incorporate <u>local</u> optimizer functionality (company specific functionality like start and stop optimization etc).

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

HVAC Optimizer provides an optimized DHW Mode (DHWModeOptim) and a delta DHW temperature setpoint value which allows shift the actual setpoint (TempDHWSetpOptimShift). These values are consumed by the DHWC.

The DHWC provides a Status output signal with optimizer-attributes, the operating mode which the controller is currently using (including external and local optimization) and the currently active DHW temperature setpoint.. These information are mainly used for visualization (e.g. on a room unit)

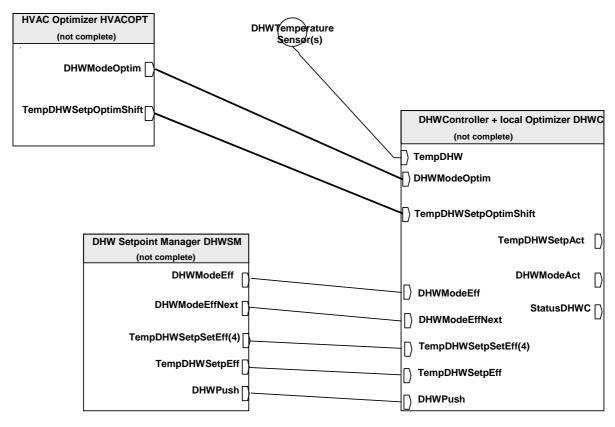


Figure 3 Link with HVAC Optimizer (simplified)

# 2.1.4 Solar DHW applications

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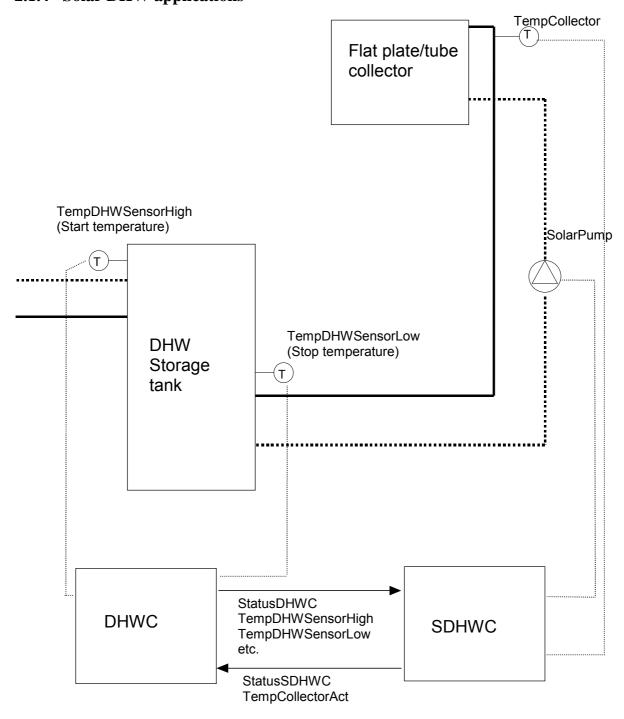


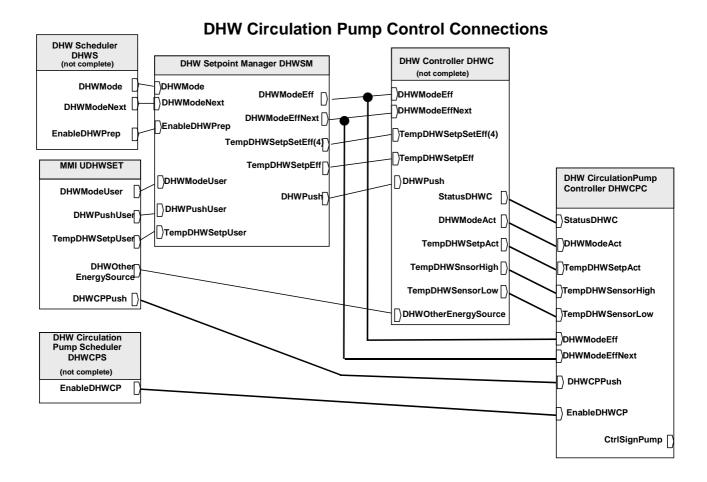
Figure 4 Link with Solar DHW Controller (simplified)

In solar energy supported DHW systems an additional Solar Domestic Hot Water Controller (SDHWC) is present. Usually SDHWC works autonomously, i.e. SDHWC provides as much energy as possible to the DHW storage tank. SDHWC control mechanisms are very company specific.

Conventional DHW load may be influenced by the availability of solar energy. Usually conventional DHW load by the DHWC will be stopped, if sufficient solar energy is available (decision of DHWC). The SDHWC provides the 'StatusSDHWC' and 'TempCollectorAct' containing information about availability of solar energy.

## 2.1.5 DHW Circulation Pump Control

Overview only: for more details see DHWSM in chapter 2.4



**Figure 5 DHW Circulation Pump Control** 

Control of the DHW Circulation Pump may depend on:

- currently active DHW operating mode(s) from DHWSM, DHWC and the next DHW operating mode. In this case DHW load and operation of the DHW circulation pump are "synchronised".
- a separate DHW circulation pump scheduler. In this case DHW load and operation of the DHW circulation pump are completely independent. E.g. load of the DHW storage tank during night time (e.g. 04:00 06:00) and operation of the DHW circulation pump depending on the needs of the user (e.g. from 06:00 22:00)
- the current temperatures in the DHW storage tank. It does not make sense to run the circulation pump if DHW temperature is much below the requested DHW temperature setpoint.
- a DHW circulation pump push "trigger" command from an MMI: to run the circulation pump on user request for a limited time (parameter).

# 2.2 Functional Block: Domestic Hot Water Setpoint Manager (DHWSM)

## 2.2.1 Functional Specification

The Domestic Hot Water Setpoint Manager DHWSM provides resulting DHW operating modes and setpoints to the DHW system in a DHWZone.

The following output signals are provided by the DHWSM:

'DHWModeEff'

Contains the actual resulting DHW operating mode; DHWModeEff may depend on automatic time schedule, local user operation (MMI) etc.

- = value of DHWMode input if DHWModeUser = AUTO
- = value of DHWModeUser input if DHWModeUser <> AUTO
- = Off/FrostProtect if input EnableDHWPrep=false

See example below 1)

'TempDHWSetpSetEff[4]'

This output contains the effective temperature setpoints for the four different DHW operating modes: 'LegioProtect', 'Normal', 'Reduced' and 'Off/FrostProtect'.

This set of 4 setpoint values is usually derived from the parameters:

- TempDHWSetpLegioProtect,
- TempDHWSetpNormal,
- TempDHWSetpReduced,
- TempDHWSetpOff/FrostProtect

The setpoint for 'Normal' level may also be derived from 'TempDHWSetpUser' (if present).

The datapoint has no 'temperature valid' attributes, i.e. all four temperature fields must contain valid data. If a device does not support some DHW operating modes and the corresponding DHW setpoints, reasonable default values must be generated by the DHWSM.

The DHWSM shall guarantee a reasonable and consistent set of setpoints. The following rule shall be observed:

- TempDHWSetpSet.LegioProtect > TempDHWSetpSet.Normal
- TempDHWSetpSet.Normal ≥ TempDHWSetpSet.Reduced
- $TempDHWSetpSet.Reduced \ge TempDHWSetpSet.Off/FrostProtect$

'DHWModeEffNext'

Contains the next expected DHW operating mode and the delay time until the change of DHWModeEff (according to advanced scheduling information, local user operation etc.)

=> used in the DHWC for local optimiser functionality

'TempDHWSetpEff'

The currently effective DHW temperature setpoint (For simple DHW applications; no usage of DHWMode.)

- 'DHWPush'

This signal indicates that a user needs short time DHW 'Normal' temperature independent of the DHW operating mode. DHW storage tank must be loaded once to 'Normal' temperature level. This signal is only generated if 'EnableDHWPrep' input has the value 'enabled'. See example below <sup>1)</sup>

- 'DHWModeUserEff' Resulting user interaction on DHW Mode (manual override

'LegioProtect', 'Normal', 'Reduced' and 'Off/FrostProtect' or 'AUTO'

to enable DHW scheduler).

The value of DHWModeUserEff can be the result of the signal DHWModeUser from an MMI (UDHWSET) or the signal

EnableDHWPrep from DHW scheduler (DHWS) or e.g. local settings on

the device containing the DHWSM.

This output signal can be used on the MMI (UDHWSET) for immediate

feedback about the result of user interaction.

See example below <sup>2</sup>)

The above output values are calculated by the DHWSM depending on various input information originated by a DHW scheduler, user MMI, management station etc.

- 'DHWMode' Actual/present DHW operating mode ('LegioProtect', 'Normal',

'Reduced' and 'Off/FrostProtect') being provided by DHWS in a

"management / programme unit"

- 'DHWModeNext' Next DHW operating mode ('LegioProtect', 'Normal', 'Reduced' and

'Off/FrostProtect') and the delay time until the change of DHWMode

being provided by DHWS in a "management / program unit"

- 'EnableDHWPrep' Information from DHWS e.g. in a management station whether DHW

preparation is enabled or not (e.g. availability of hot water supply)
The value of this input enables or disables user requests for DHW
preparation according to DHWModeUser and DHWPushUser inputs. See

example below 1)

- 'DHWModeUser' DHW operating mode ('LegioProtect', 'Normal', 'Reduced' and

'Off/FrostProtect' or AUTO) being provided by a MMI unit, in order to be able to change the mode manually. The value of this input has no effect if 'EnableDHWPrep' input has the value 'disabled' See example

below 1)

- 'DHWPushUser' Trigger command from an MMI. The user requests a DHW "push" This

function only makes sense in residential applications where DHW load is controlled individually per apartment or single family home. DHW "push" from different users / apartments in the same DHWZone is

usually not applicable.

The value of this input has no effect if 'EnableDHWPrep' input has the

value 'disabled'. See example below 1)

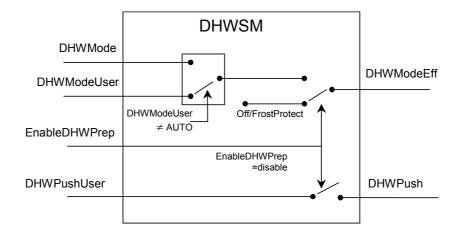
'TempDHWSetpUser' This input can be considered as a remote override of the DHW temp.

setpoint for 'Normal' operating mode.

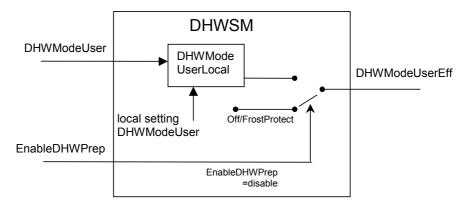
In simple systems without DHW scheduler (fixed 'Normal' operating mode DHWModeEff), the user has the possibility for manual adjustment

of the DHW temperature setpoint. See example below <sup>3</sup>)

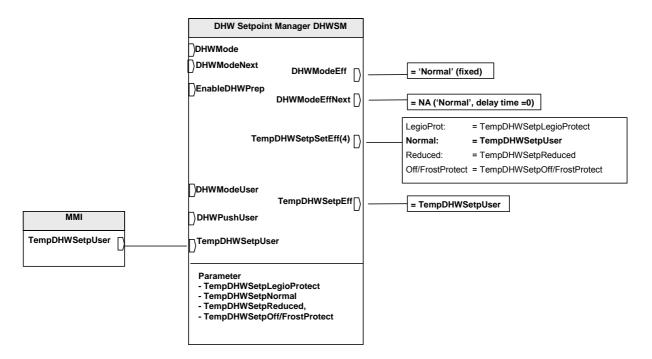
<sup>&</sup>lt;sup>1)</sup> illustrative example(not normative): generation of DHWModeEff and DHWPush depending on input signals



<sup>&</sup>lt;sup>2)</sup> illustrative example(not normative): generation of DHWModeUserEff output depending on DHWModeUser and EnableDHWPrep input signals and local settings. In this example local setting of DHWModeUser is a "trigger" (last update of DHWModeUserLocal wins)

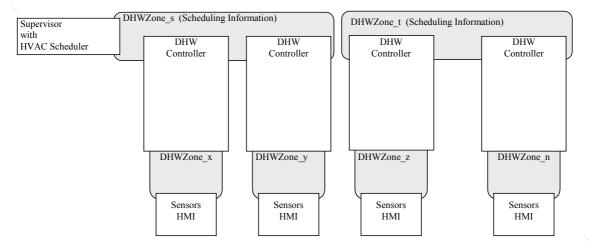


<sup>3)</sup> illustrative example: Simple system without DHW Scheduler, 24 h DHW preparation (fixed DHWMode)



#### **Binding Groups (LTE)**

The DHWSM may belog to two different DHWZone different binding groups.



Binding group x, y, z, n

This binding group corresponds with the DHWZone to which the DHW functional block effectively belongs.

- Binding group s, t

This binding group is used to get the 'programme information' from the supervisor/scheduler. I.e. the DHWSM may get 'programme information' such as DHWMode, DHWModeNext etc. from a different DHWZone. Example:

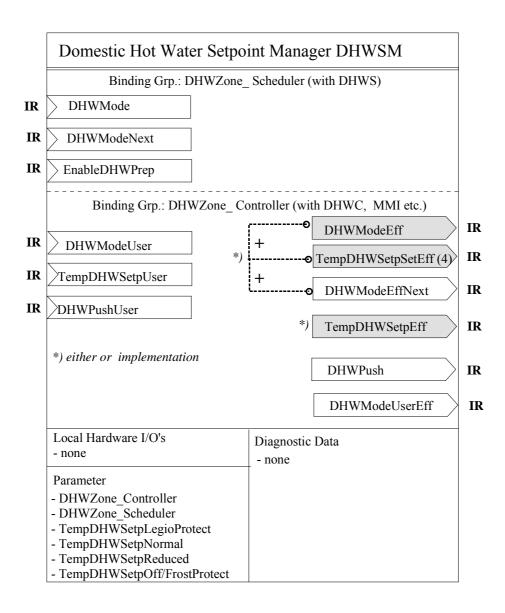
The DHW circuits with DHWZone\_x and DHWZone\_y

use the same 'programme' form DHWZone\_s

#### 2.2.2 Constraints

Only one DHWSM is allowed in a DHWZone which reperesents a DHW control circuit

# 2.2.3 Functional block diagram



# 2.2.4 Datapoint description

# **2.2.4.1** Overview

Datapoint	Description	Datapoint Type	DPT N°
Outputs			
DHWModeEff	present/effective DHW operating mode; it may depend on automatic time schedule, local user operation etc. / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
DHWModeEffNext	next DHW operating mode and time until change of mode	DPT_DHWModeNext	206.102
TempDHWSetpSetEff [4]	set of effective DHW temperature setpoints for 'LegioProt', 'Normal', 'Reduced' and 'Off/Protection' operating modes	DTP_TempDHWSetpSet[4]	213.101
TempDHWSetpEff	present/effective DHW temperature setpoint / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
DHWPush	resulting DHW push command	DPT_Trigger	01.017
DHWModeUserEff	resulting user DHW operating mode (manual override); may be used for feedback on the MMI (UDHWSET) / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
Inputs			
DHWMode	scheduler dependent DHW operating mode/ LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
DHWModeNext	scheduler dependent next DHW operating mode and time until change of DHWMode	DPT_DHWModeNext	206.102
EnableDHWPrep	indicates whether energy supply for DHW load is available or not	DPT_Enable	1.003
DHWModeUser	DHW operating mode selected by user (manual override) / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
TempDHWSetpUser	DHW temperature setpoint, manually set by user on an MMI / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
DHWPushUser	DHW push command from user MMI	DPT_Trigger	01.017
Parameters			
DHWZone_Scheduler	LTE zone: DHW zone number; link with scheduler	DPT_UcountValue8_Z	202.002
DHWZone_Controller	LTE zone: DHW zone number; link with DHW control circuit	DPT_UcountValue8_Z	202.002
TempDHWSetpLegioProtect	DHW temperature setpoint for 'LegioProt' operating mode	DPT_TempHVACAbs_Z	205.100
TempDHWSetpNormal	DHW temperature setpoint for 'Normal' operating mode	DPT_TempHVACAbs_Z	205.100
TempDHWSetpReduced	DHW temperature setpoint for 'Reduced' operating mode	DPT_TempHVACAbs_Z	205.100
TempDHWSetpOff/FrostProtect	DHW temperature setpoint for 'Off/Protection' operating mode	DPT_TempHVACAbs_Z	205.100
Diagnostic Data			

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

			STANDARD MODE		
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	DHWModeEff	$GO_b^{\ 2)}$	GO <sup>2)</sup>	GO <sup>2)</sup>	M <sup>2)</sup>
	DHWModeEffNext	<b>NA</b> 1)	NA	NA	O 2)
	TempDHWSetpSetEff [4]	<b>NA</b> 1)	NA	NA	M 2)
	TempDHWSetpEff	$\mathbf{GO_b}^{2)}$	GO <sup>2)</sup>	GO <sup>2)</sup>	M 2)
	DHWPush	(GO <sub>b</sub> )		(GO)	О
	DHWModeUserEff	(GO <sub>b</sub> )		(GO)	О
Inputs	DHWMode	(GO <sub>b</sub> )		(GO)	О
	DHWModeNext	<b>NA</b> 1)	NA	NA	О
	EnableDHWPrep	(GO <sub>b</sub> )		(GO)	О
	DHWModeUser	(GO <sub>b</sub> )		(GO)	О
	TempDHWSetpUser	(GO <sub>b</sub> )		(GO)	О
	DHWPushUser	(GO <sub>b</sub> )		(GO)	О

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

2) Either implementation of { DHWModeEff + TempDHWSetpSetEff [4] (+ DHWModeEffNext) } or

{ TempDHWSetpEff }

Table 1: DHWSM Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DHWZone_Controller	M
	DHWZone_Scheduler	О

**Table 2: DHWSM LTE specific Properties** 

		Support
Parameter	TempDHWSetpLegioProtect	О
	TempDHWSetpNormal	M
	TempDHWSetpReduced	О
	TempDHWSetpOff/FrostProtect	О
Diagnostic Data		

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

# 2.2.4.2 Output DHWModeEff

### **Standard mode:**

DP Name:	DHWModeEff		Abbr.:		Manda	tory 2)					
FB Name:	DHWSM				Can be	interna	al 🗌				
Description											
This output co	ntains the effective D	HW Mode of the	DHW zone								
<b>Datapoint Ty</b>											
DPT_Name:	DPT_DHWMode										
DPT Format:	N <sub>8</sub>			DPT_ID:	20.103						
Field	Description			Supp.	Range	Unit	Default				
			14 1)		CS						
Access Type											
◆ Output											
this $\rightarrow$ M		→ 1									
Spontaneo	us 🛛 COV:	\ \\Valu		Min repetition	period:	2sec 3)					
	Cyclic	☐ Period:	: 15min								
Request	Request 🛛										
Communicat	on Type										
	ject Datapoint				Mandatory	/:   <del> </del>					
Default Gro	oup Address:										
Dynamics											
Power dow											
Power up:	Value: No	initialisation:	D <sub>0</sub>	efault value:							
		ved value:		ctual value:							
	Transmit on bus	S:									
<b>Exception Ha</b>	ndling										
Special Featu											
	to' is not allowed										
Either imple	<sup>2)</sup> Either implementation of {DHWModeEff } or {TempDHWSetpEff}										
the Min repe	3) the Min repetition period of 2 sec shall be respected if the COV of the signal is the result of a calculation. However the signal may be sent immediately if the COV is the result of user interaction										
		nay be sent imme	ediately if the	COV is the r	esult of use	r intera	ction				
(locally or by	/ input signal).										

### LTE-HEE mode:

FB: DH	WSM	LTE S	erver Output Name:	DHWMod	deEff				Manda O <sub>l</sub>	atory 🔯 3) otional 🔲	
Descripti	on:	•		_				•			
This outpu	ut contaii	ns the e	effective DHW Mode of	of the DHW	zone						
DPT: N	lame D	PT_DF	lWMode_Z	DPT ID	201.10	2 D	atatype	format	$N_8Z_8$		
Field		De	scription		Sup.	Rang	ge	Unit	COV	Default	
DHWMod	е		ual DHW Mode		M	[14] 1)			Υ	cs	
Status			ndard Status attribute								
- Overridd			IW mode overridden t	rue / false	0	true/false bool			Υ	true	
- all other	9		supported		ļ						
Command			ndard Command, writ								
<ul> <li>Override</li> </ul>	<b>.</b> &	ove	erride and release set	point	0						
Release					NA						
- all other		not	supported	supported							
command								-			
Commun											
	Group:		T <b>-</b>				In (				
Class			Туре				Defau	ılt			
	aphical		DI IVA/7 /I i a l i i								
	ation Spe	CITIC					-   1				
Unass		Ш	Broadcast	Configura		D			F.4		
DP Add			IO Type(ID): 176 (DHWSM) Property ID: 51 COV ☑ MinRepTime: 2 sec 4) Heartbeat: 15					15 min			
	rvices (e										
InfoRe	Read-Res	Sponso	Output per default d	Output per default communicating				oup Wildo	ard allov	wed 🗌	
`	of the o	•	Tx Prio:	High 🗌		N	ormal D	7	Low	, $\Box$	
	lways be										
suppor	rted)		Transm after Power	rup: Stored	l Value		Act Valu	ue 🖂 🏻 🗀	efault V	alue 🗌	
	y-Servic ual acce		Read only		Read/V	Vrite		2)			
Exception	n Handli	ng:						Save a	at Power	down	
Special F											
<b>^</b> \	∖uto' is n										
		optional	l; for Override / Releas	se function	only: if	'Over	ridden' 1	the DHW	SM send	ds the	
<sub>3</sub> , override											
either in	Either implementation of {DHWModeEff + TempDHWSetpSetEff [4] (+ DHWModeEffNext) } or										
	HWSetp						_				
the 2 se	c MinRe	pTime :	shall be respected if the	he COV of	the sigr	nal is t	he resu	It of a cal	culation.	However	
the signa	ai may b	e sent i	mmediately if the CO\	v is the res	ult of us	ser inte	eraction	(locally	or by inp	ut signal).	

# 2.2.4.3 Output DHWModeEffNext

Standard mode: NA LTE-HEE mode:

FB: DHWSM LTES	Server Output Name:	DHWMod	leEffNe	ext			Mandatory ☐ Optional ☒		
Description:		-				-			
This output contains the									
This information is e.g. us								on	
_	HWModeNext	DPT ID	206.10			format			
	escription		Sup.	Range	)	Unit	COV	Default	
,	ne to next DHW mode	in	M	full min			15 <sup>2)</sup>	0	
1	nutes	1)							
	no next DHW Mode	available '							
	ext DHW Mode		M	[14] and Y				CS	
	= Mode Undefined 1)			[0] 1)					
Communication:									
Binding Group:	1								
Class	Туре	Type Default							
Geographical 🔲									
Application Specific⊠			·		1				
Unassigned	Broadcast								
DP Address:	IO Type(ID):						52		
LTE-Services (event):		/linRepTime		10 s	ec	Heart	beat:	15 min	
InfoReport ⊠ (LTE Read-Response	Output per default o	communicat	ing	Bindi	ng Gro	up Wildo	ard allov	ved 🗌	
polling of the output	Tx Prio:	High 🗌		No	rmal 🗵		Low		
shall always be supported)	Transm after Power	up: Stored	Value	A	ct Valu	e⊠ D	efault Va	alue 🗌	
Property-Service (individual access):	Read only		Read/V	Vrite					
Exception Handling:	•					Save a	at Power	down	
Special Features:									
	encoding of special conditions, see table below COV value is identical to heartbeat time (15 min).								

# Interpretation of Time and DHWMode fields

Time	DHWMode	
= 0 (Undefined)	= 0 (Undefined)	the content of the datapoint is void / undefined => no next DHWMode available for an undefined time period
= 0 (Undefined)	= {14}	defined and valid next DHWMode but the delay time is undefined/unknown => in case of manually selected DHWModeUser ≠ 'Auto' (i.e. next DHWMode = current DHWModeEff)
> 0	= 0 (Undefined)	undefined (unknown) DHWMode during a defined delay time => in practice this combination is useless and not allowed
> 0	= {14}	defined and valid DHWMode and delay time

# 2.2.4.4 Output TempDHWSetpSetEff[4]

Standard mode: NA

### LTE-HEE mode:

FB:	DHWSM	LTE S	erver Output Name:	TempDH	WSetp:	SetE	ff[4]		Manda O	ntory 🔯 1) ptional 🔲	
Desci	ription:	*		<del>-</del>							
This of 'Off/Piactual	output contain rotection' op DHW tempe	erating erature	t of effective DHW ten modes. The temperat setpoint. apter 2.2.1, descriptio	ture set is e	.g. use	d in t	the DHW	C in orde			
DPT:			mpDHWSetpSet[4]		213.10		Datatype		V <sub>16</sub> V <sub>16</sub> V <sub>1</sub>	16V16	
Field	i vamo   2	<u> </u>	Description	122	Sup.	Rar		Unit	COV	Default	
	SetpLegioPr		DHW temperature se LegioProtect operating	M	cs		°C	0.2	cs		
Temp	SetpNormal		DHW temperature se Normal operating mo		M	cs		°C	0.2	cs	
Temp	SetpReduce	d	DHW temperature se Reduced operating m	tpoint for	М	cs		°C	0.2	cs	
Temp ect	SetpOff/Fros	stProt		DHW temperature setpoint for M cs °C Off/FrostProtect operating				°C	0.2	CS	
Comr	Communication:										
Bind	ding Group:										
Clas			Туре				Defau	ılt			
Ap Un	ographical plication Spe assigned	ecific⊠	Broadcast 🗍	Configura	ible 🗌		1				
	Address:		IO Type(ID):	176 (DHW			operty ID		53		
Inf (L7	-Services (e oReport ΓE Read-Re	⊠ sponse	Output per default o	//inRepTime communicat			sec nding Gro		tbeat: card allov	15 min wed	
	lling of the o		Tx Prio:	High 🗌			Normal 🏻		Low	' 🔲	
su	all always be pported)		Transm after Power	rup: Stored	Value		Act Valu	ue 🛛 🏻 🗈	Default V	alue 🗌	
	perty-Servic ividual acce		Read only		Read/V	Vrite					
Excep	otion Handli	ing:	•					Save	at Power	down	
	al Features										
Temp  1) Eith	Some rules shall be respected, for further details see chapter 2.2.1, description of FempDHWSetpSetEff[4] output  Discrepiblia in the control of section of the control of the control of the control of section of the control of section of the control of section of the control of the control of section of section of section of the control of the control of section of the control o										

# 2.2.4.5 Output TempDHWSetpEff

# **Standard mode:**

DP	Name:	Ten	npDHWS	SetpE	ff	Abbr.:				Mandat	tory 1)	
FΒ	Name:	DH\	NSM							Can be	interna	al 🗌
Des	scription											
			DHW te	empei	rature setpoi	nt						
Dat	tapoint Typ	эе										
DP	T_Name:	DF	PT_Valu	e_Te	mp							
	T Format:	F <sub>1</sub>							DPT_ID:	9.001		
Fie	ld	De	escription	n					Supp.	Range	Unit	Default
									full range	°C	CS	
Acc	Access Type											
<b>♦</b>	Output											
	this $\rightarrow$ M		3	th	$nis \rightarrow 1$							
	Spontaneous   COV:   Δ-Value:   0.2 °C   Min repetition period:   10s											
				Cyclic		Period:	15 Mi	n				
	Request		$\boxtimes$									
Co	mmunicati	on T	Гуре									
<b>♦</b>	Group Obj	ject	Datapoir	nt						Mandatory	r: 🛛 🖂	
	Default Gro	oup A	Address		-							
Dyı	namics											
	Power dow	'n:	Save:									
	Power up:		Value:		No initialisat	tion:		Defau	ılt value:			
					Saved value			Actua	I value (n	ot for input)	: 🛛	
				nit on	bus (only for	r output):		Read	from bus	(only for in	out):	
Exc	ception Ha	ndli	ng									
Spe	Special Features											
') E	Either implementation of {DHWModeEff } or {TempDHWSetpEff}											

### LTE-HEE mode:

FB:	DHWSM	LTE	Serv	ver Output Name:	TempDHW	/SetpEf	ff			Mandatory 🔀 2) Optional		
Desc	ription:	<u> </u>								<u> </u>	otional	
		e DH	W te	emperature setpoint	of the DHW	zone						
DPT:				npHVACAbs Z	DPT ID	205.10	0	Datatype	format	V <sub>16</sub> Z <sub>8</sub>		
Field	•			cription		Sup.	Ra	nge	Unit	COV	Default	
Temp	)			perature setpoint va		М	full °C		°C	0.2°C		
Statu			stan	dard Status attribut	tes							
	OfService			value: setpoint not		M	true/false bool			Υ	true	
- Ove	rridden			oint value overridde	en true /	0	tru	e/false	bool	Υ	true	
			false									
	ther flags			supported		<u> </u>						
Comr				dard Command, wi								
				ride and release se	etpoint	0						
Relea			4 .									
- all o	tner nands		not s	supported		NA						
						<u> </u>			-	<u> </u>		
	munication											
Clas	ding Group	J.		Tuno				Defau	.14			
	eographical		П	Туре				Delat	IIL			
	pplication S			DUMZono /Link.w	ith Controllo							
	nassigned	pecili		DHWZone (Link with Controller) 1  Broadcast Configurable								
	Address:		Ш	IO Type(ID):	176 (DHW		D	roperty ID		55		
	-Services	(over	٠+١٠		MinRepTime			0 sec	Heart		15 min	
	foReport		ιι). Χ	Output per default								
	TE Read-R				Communica	ung	Bi	inding Gro	oup Wildo	ard allov	wed	
	lling of the			Tx Prio:	High			Normal D	₹	Low	· 🔲	
	all always b			_		1.1.1-1			_	- 6 16 \ /	-1	
	pported)			Transm after Powe	erup: Stored	value	Ш	Act Val	ue 🖂 D	efault V	aiue 🔛	
	perty-Serv			Read only	1	Read/V	\/ritc		1)			
,	lividual acc			Tread only		i (Cau) v	VIIIC	, <u> </u>				
Exce	Exception Handling: Save at Powerdown											
	Special Features:											
	write access is optional; for Override / Release function only. If 'Overridden' the DHWC uses the											
2) <b>–</b>	erride value	e for [	کHWر	temperature contro	ol Bunas		cc r	. /. Б				
É' Eith	er impleme	entatio	on of	{DHWModeEff + T	empDHWSe	etpSetE	IT [4]	l (+ DHMI	ViodeEffN	iext)} o	r	
[ {I	empDHWS	etp <b>⊵</b> f	<b>†</b> }									

# 2.2.4.6 Output DHWPush

# **Standard mode:**

DF	Name:	DHWPush	Abbr.:		Mandat	tory					
B	Name:	DHWSM			Can be	interna					
De	escription										
Re	esulting DHV	VPush command from DHWSM; for furth	er details	see LTE-Mod	de						
Da	tapoint Ty	oe .									
	PT_Name:	DPT_Trigger									
	PT Format:	B <sub>1</sub>		DPT_ID:	01.017						
Fie	eld	Description		Supp.	Range	Unit	Default				
				{0,1}		0					
Ac	cess Type										
<b>♦</b>	Output										
	this $\rightarrow$ M	$ $ this $\rightarrow$ 1									
	Spontaneous   COV:   Δ-Value:   Min repetition period:   10sec										
		Cyclic Period:									
	Request										
Cc	ommunicati										
<b>♦</b>		ect Datapoint			Mandatory	<i>'</i> :   🖂					
		oup Address:									
Dy	namics										
	Power dow										
	Power up:	Value: No initialisation:		efault value:							
		Saved value:	A	ctual value:							
		Transmit on bus:									
Ex	ception Ha	ndling									
	ecial Featu										
'' t	this signal is transmitted once if condition for a DHW push occurs: the datapoint value is 1 = 'trigger'.										
	Value = 0 ('no action') is not transmitted !										

### LTE-HEE mode:

FB: DHWSM LTE Se	erver Output Name:	DHWPus	h				Mandatory ☐ Optional ⊠			
Description:		-				<del>"</del>				
'Normal' temperature level DHWModeOptim). This signeception of a DHWPushURedundant retransmission	This trigger signal from the DHWSM indicates that the DHW storage tank must be loaded once to Normal' temperature level, independent of the actual DHW operating mode (DHWModeEff or DHWModeOptim). This signal is provided by the DHWSM only once on event (no heartbeat) after eception of a DHWPushUser signal if heat production is enabled (EnableDHWPrep = true). Redundant retransmission of DHWPush for higher reliability is not necessary => feedback for risualization is provided by DHWC in StatusDHWC									
<b>DPT</b> : Name DPT_Trig	ger	DPT ID	01.017	Da	atatype	format	B <sub>1</sub>			
Field Des	cription		Sup.	Range	Э	Unit	COV	Default		
				{0,1}	)		Y 1)	0		
Communication:										
Binding Group:										
Class	Туре	Type Default								
Geographical 🔲										
Application Specific⊠	DHWZone (Link with		·		1					
Unassigned	Broadcast	Configura								
DP Address:		176 (DHWSM) Property ID:					54			
LTE-Services (event):							beat:	min		
InfoReport ⊠ (LTE Read-Response	Output per default co	ommunicat	ing	Binding Group Wildcard allowed				ved 🗌		
polling of the output	Tx Prio:	High 🗌		No	rmal 🛭	3	Low			
shall always be supported)	Transm after Power	up: Stored	Value		ct Valu	ıe 🗌 D	efault Va	alue 🗌		
Property-Service (individual access):	Read only $\square^2$	2)	Read/V	Vrite						
<b>Exception Handling:</b>	•					Save a	at Power	down		
Special Features:										
1) this signal is transmitted	this signal is transmitted once it condition for a Drivy push occurs, the datapoint value is 1 - thigger.									
Value = 0 ('no action') i	Value = 0 ('no action') is not transmitted !									
Read access is in princi DP will always be 0	Read access is in principle possible but in practice not useful since the read-back value of this transient									

# 2.2.4.7 Output DHWModeUserEff

# **Standard mode:**

Б	Name:	DH\	<b>NModeUse</b>	rEff		Ab	br.:			Manda	itory		
FB	Name:	DH\	NSM							Can be	e interna	ıl	
De	scription												
				ting DHW op									
		_		DHWSM if t					-				Ξff
				er and Enabl									
		DH	WSM. This	output can b	e used for	r feedb	ack or	ı the	e MMI (UE	)HWSET).	See als	o cha	pter
2.2													
Da	Datapoint Type												
	DPT_Name: DPT_DHWMode												
DF	DPT Format: N <sub>8</sub>								DPT_ID:	20.103	3		
Fie	eld	escription					Supp.	Range	Unit	Defa	ult		
										04		CS	;
Ac	Access Type												
<b>♦</b>													
	this $\rightarrow$ M $\square$ this $\rightarrow$ 1 $\square$												
	Spontaneous   COV:   Δ-Value:   Min repetition period:   2 sec 1)												
	•		Сус	ic 🛛	Period:	: 15	min		•		•		
	Request												
Co	mmunicati	on T	Гуре										
•	Group Ob									Mandator	y:   🛛		
	Default Gro	oup /	Address:										
Dy	namics												
	Power dow	'n:	Save:										
	Power up:		Value:	No initialis	sation:		De	efau	ılt value:				
				Saved val	ue:		Ad	ctua	l value:				
			Transmit o	n bus:	-								
Ex	ception Ha	ndli	ng										
-													
Sp	ecial Featu	ires											
1) t	1) the Min repetition period of 2 sec shall be respected if the COV of the signal is the result of a												
				ınal may be		ediately	, if the	CO	V is the re	esult of use	er intera	ction	
(	locally or by	/ inp	ut signal, e.	g. DHWMod	leUser).								

### LTE-HEE mode:

FB:	DHWSM		LTE S	Server Output Name: DHWModeUserEff Mandatory Optional O									
Descr	iption:				-								
				sulting DHW operation									
				scheduler is overrido									
				f is derived from DH\									
				e containing the DHV	VSM. This	output c	an be	used fo	r feedba	ick on the	MMI		
•				apter 2.2.1	I D D T I D	004.40	<u> </u>						
DPT:	Name	ואט		WMode_Z	DPT ID	201.10			format		D ( 11		
Field				cription		Sup.	Rang [04]		Unit	COV	Default		
DHWI				al DHW Mode						Υ	CS		
Status				dard Status attribute	S	_							
				value true / false		0	true/		bool	Y	false		
				V mode overridden ti	0	true/false bool			Υ	false			
	her flags			supported		<b>∤</b>				_			
Comm				dard Commands, W									
- Over	ride / Rele	ease		porary override / rele	ease of	0							
0 1 /	ъ			VMode									
	Reset OS	V		/ reset of out of servi	ce	0							
- all ot			not s	supported	NA								
comm			<u> </u>			L					-		
	nunicatio												
	ling Grou	p:						To 6					
Clas				Туре				Defau	lt				
	ographica												
	plication S	peci	tic X	DHWZone				1					
	assigned		Ш	Broadcast	Configura								
	Address:			IO Type(ID):	176 (DHW		Pro	perty ID:		56			
	-Services	(eve	<u> </u>		/linRepTim		2	sec 2)	Hear	tbeat:	15 min		
	oReport			Output per default o	communica	ting	Bind	ding Gro	up Wildo	card allow	red □		
	E Read-R			To Delay	I II ada 🗆								
	lling of the all always		out	Tx Prio:	High 🗌		IN	lormal 🔀		Low			
su	oported)			Transm after Power	up: Stored	l Value		Act Valu	ıe 🛛 🏻 🖸	Default Va	lue 🗌		
	erty-Servividual ac		٠)٠	Read only		Read/V	Vrite	$\boxtimes$	1)				
	otion Hand								Save	at Powerd	lown□		
	Zion nan	annig	<u>j-</u>						Ouve	at i owoic			
Speci	al Feature	es:											
			ional;	for Override / Releas	se or Set/R	eset OS	SV fur	nction or	nly (in pra	actice usu	ally not		
ver	y meaning	gful f	or DH\	WModeUserEff)							-		
<sup>2)</sup> the 2	2 sec MinF	RepT	ime sl	hall be respected if the	ne COV of	the sigr	nal is t	he resul	t of a ca	lculation.	However		
the	signal ma	ıy be	sent i	immediately if the Co	OV is the re	esult of	user ii	nteractio	n (locall	y or by in	out		
sig	nal, e.g. D	HWI	Model	Jser).									

## 2.2.4.8 Input DHWMode

## **Standard Mode:**

DF	DP Name: DHWMode Abbr.: Mandatory L												
FΒ	Name:	DH۱	NSM							Can be	internal	$\square$	
De	escription												
					nanagement stat								
					vithout DHW sch				ре ор	tional (u	sage of		
_			nly or fixed	default	DHW mode insi	de the Di	HWSM	1).					
	Datapoint Type												
	PT_Name:	DI	PT_DHWM	ode									
DF	DPT Format: N <sub>8</sub> DPT_ID: 20.103												
Fie	eld	De	escription					Supp.	F	Range	Unit	Default	
									1.	4 1)		CS	
Ac	cess Type												
•	Input												
	$N \rightarrow \text{this}$ $\square$ $1 \rightarrow \text{this}$ $\boxtimes$												
	Spontaneo	JS	$\boxtimes$		Cyclically:	$\boxtimes$		Tim	e-out	i:	31min		
	Request				Polling:			Peri	iod:				
Ö	mmunicati	on <sup>·</sup>	Гуре										
•	Group Obj	ect	Datapoint						Ma	andatory	: 🛛		
	Default Gro	up .	Address:										
Dy	namics												
	Power dow	n:	Save:										
	Power up:		Value:	No ir	nitialisation:		Defau	ult value:			$\boxtimes$		
				Save	ed value:								
							Read	from bu	s:				
Ex	ception Ha	ndli	ng										
Sp	ecial Featu	res											
<sup>1</sup> ) v	value 0='Aut	:o' is	not allowe	d and s	shall be ignored	=> use de	efault v	value					

# Hot Water Heating

### LTE-HEE Mode:

FB: DHWSM LTE C	lientInput Name:	DHWMode				Mand	
						Op:	tional 🛚
Description:							
This input signal from a so							
operating mode. In simple				y be c	ptional	(usage of	
DHWModeUser only or fix							
	WMode_Z	DPT ID   201.102	2 Data	atype :	format	$N_8Z_8$	
Field	Description				Sup.	Unit	Default
DHWMode	Actual DHW Mode				M	enum.	CS
STATUS	Can be ignored by	the DHWSM			NA		
Communication:				-			
Binding Group:							
Class	Туре			Defaul	t		
Geographical 🔲							
Application Specific⊠	DHWZone (Link wi	th Scheduler)	]1	1			
Unassigned $\Box$	Broadcast	Configurable					
DP Address:	IO Type(ID):	111 (DHWS)	Proper	rty ID:		51	
LTE-Service (event):	InfoReport Sniffer	on Binding Group:					
InfoReport 🖂	Timeout:	31	Min				
LTE-Service (polling): Read – Response	Read Wildcard / Re	esp Sniffer on Bindir	ng Grou	p:			
Value after Power-up:	Default \	Value ⊠				Stored Val	ue 🗌
Exception Handling:				Sa	ave at F	owerdow	n 🗌
Special Features:							
1) value 0='Auto' is not allo	wed => to be ignore	ed by the DHWSM =	> use de	efault	value		
This input may be device-	internal						

## 2.2.4.9 Input DHWModeNext

Standard Mode: NA LTE-HEE Mode:

FB: DHWSM LTE C	lientInput Name:	DHWMod	eNext					atory 🗌 tional 🖂
Description:		-						
This optional input signal	rom a scheduler, ma	anagement	station etc.	conta	ins ne	ext DH\	V operatir	ng mode
and the time until the next								
This information is used b	y the DHWSM to ge	nerate the [	DHWModeE	EffNex	t outp	ut (con	sidering a	lso
DHWModeUser)		DPT ID	206.102					
<b>DPT</b> : Name DPT_DH	type f	ormat	$U_{16}N_{8}$					
Field	Description					Sup.	Unit	Default
Time	Time to next DHW					M	min	0
	0 = no next DHWM		ole ''					
DHWMode	Next DHWMode, ra					M	enum.	CS
	and [0] = Mode Un	defined '/						
Communication:								
Binding Group:								
Class	Туре			D	efault			
Geographical								
Application Specific⊠	DHWZone (Link wi			1				
Unassigned	Broadcast	Configur						
DP Address:	IO Type(ID):	111 (DHW		ropert	y ID:		52	
LTE-Service (event):	InfoReport Sniffer	on Binding						
InfoReport 🗵	Timeout:		31 M	in				
LTE-Service (polling):	Read Wildcard / Re	esp Sniffer	on Binding	Group	)·			
Read – Response								
Value after Power-up:    Default Value ∑    Stored Value □								
Exception Handling:					Sa	ve at F	owerdow	n 🗌
Special Features:								
1) encoding of special con-		low						
This input may be device-	internal							

## Interpretation of Time and DHWMode fields

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

# 2.2.4.10 Input EnableDHWPrep

## **Standard Mode:**

DP Name: E	nableDHWPre	p		Abbr.:	-			Manda	atory	
FB Name:	HWSM							Can b	e internal	$\boxtimes$
Description										
see LTE-HEE N	/lode									
<b>Datapoint Type</b>	е									
DPT_Name:	DPT_Enable									
DPT Format:	B <sub>1</sub>					DP	T_ID:	1.003		
Field	Description					S	upp.	Range	Unit	Default
									bool	enable
Access Type										
♦ Input										
$N \rightarrow this$		$1 \rightarrow \text{this}$	$\boxtimes$							
Spontaneou	s 🛛	Су	clically:	$\boxtimes$			Time-	out:	31min	
Request		Po	lling:				Perio	d:		
Communication	n Type									
♦ Group Obje	ect Datapoint							Mandator	⁻y:  ⊠	
Default Grou	up Address:									
Dynamics										
Power down	: Save:									
Power up:	Value:	No initia	lisation:		Def	ault v	alue:			
		Saved va	alue:							
					Rea	ad fror	n bus:			
<b>Exception Han</b>	dling									
Special Featur	es									

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

FB:	DHWSM	LTE CI	ient Input Name:	EnableDHWPre	р				latory 🔲 tional 🖂
Desci	ription:								
		ded by a	scheduler or a sup-	ervisor and enable	es / disal	oles D	HW prep	aration red	quested
by use	er interaction	(DHWP	ushUser, DHWMod	deUser); see also	chapter:	2.2.1			
DPT:	Name D	PT_Ena	ble	DPT ID 1.003	B Da	atatyp	e format	B <sub>1</sub>	
Field			Description				Sup.	Unit	Default
								enum.	enable
Comr	nunication:						•	=	-
Bind	ding Group:								
Clas	ss		Туре			Defa	ıult		
Ge	ographical					]			
	plication Spe	ecific	DHWZone (Link w	ith Scheduler)		1			
Un	assigned		Broadcast	Configurable [					
DP A	Address:		IO Type(ID):	111 (DHWS)	Prop	erty II	D:	53	
LTE	-Service (ev	ent):	InfoReport Sniffer	on Binding Group	p:				
Inf	oReport	$\boxtimes$	Timeout:	3	1 Min				
	-Service (po ad – Respor		Read Wildcard / R	esp Sniffer on Bin	ding Gro	up:			
Value	after Powe	r-up:	Default '	Value ⊠			,	Stored Va	lue 🗌
Exce	otion Handli	ng:			•		Save at F	Powerdow	n 🔲
The D	HWSM will ι	use the c	default value 'enable	e' if this input signa	al is not	prese	nt.		
Speci	al Features:			-					
This is	nput may be	device-ii	nternal						

## 2.2.4.11 Input DHWModeUser

## **Standard Mode:**

DP	DP Name: DHWModeUser   Abbr.:     Mandatory											
FΒ	Name:	DH	WSM						Can be	internal		
De	scription											
					the actual DH							
wil	I override th	e D	HWMode fr	om the	DHW schedule	er if the va	lue of	DHWMod(	eUser is ≠ '	AUTO'.	See also	
cha	apter 2.2.1											
	tapoint Typ	_										
	PT_Name:	D	PT_DHWM	ode								
DP	T Format:	N;	8					DPT_ID:	20.103			
Fie	eld	D	escription					Supp.	Range	Unit	Default	
									04		CS	
Ac	cess Type											
<b>♦</b>	Input											
	$N \rightarrow \text{this}$ $\square$ $1 \rightarrow \text{this}$ $\boxtimes$											
	Spontaneo	us			Cyclically:			Time-	-out:			
	Request				Polling:			Perio	d:			
Co	mmunicati	on	Туре									
<b>*</b>	Group Ob	ect	Datapoint						Mandatory	/: X		
	Default Gro	up	Address:							-		
Dy	namics											
	Power dow	n:	Save:									
	Power up:		Value:	No ir	nitialisation:		Defau	ılt value:				
				Save	ed value:							
							Read	from bus:				
Ex	ception Ha	ndl	ing									
ŀ												
Sp	ecial Featu	res										
Th	e s <mark>ignal is s</mark>	ent	due to user	interac	tion and has n	o timeout	on the	input side				

### LTE-HEE Mode:

FB:	DHWSM	LTE CI	ientInput Name:	DHWMod	eUser					latory ☐ tional ⊠
Desci	ription:	<u> </u>							<u> </u>	
This in	nput signal fr	om a HN	/II contains the actua	al DHW ope	erating m	node re	quest	ed by the	e user in t	ne same
			override the DHWM		ne DHW	schedu	uler if	the value	e of	
DHWI	ModeUser is	≠ 'AUTC	D'. See also chapter	2.2.1						
DPT:	Name D	PT_DH\	NMode_Z	DPT ID	201.102	2 Da	tatype	format	$N_8Z_8$	
Field			Description					Sup.	Unit	Default
DHWI	Mode		Actual DHW Mode	, range [04	4]			M	enum.	cs
Status			standard Status att					M	bitset	
	OfService		void DHWMode va	lue				M	bool	false
- all o	ther flags		not supported					NA	bool	
	nunication:									
Bind	ding Group:									
Clas			Туре				Defa	ult		
	eographical									
Ap	plication Spe	ecific⊠	DHWZone (Contro	ller)			1			
Un	assigned		Broadcast	Configur	able 🗌					
	Address:		IO Type(ID):	181 (UDH		Prope	erty ID	):	51	
	-Service (ev	/ent <u>):</u>	InfoReport Sniffer	on Binding	Group:		-			
	oReport	$\boxtimes$	Timeout:			Min				
	-Service (po		Read Wildcard / Re	esn Sniffer	on Rindir	na Groi	un.			
Re	ad – Respor	nse	Ticad Wildcard / Tic	cop Office	on bindii	ig Cito	up.			
Value	after Powe	r-up:	Default \	/alue ⊠					Stored Va	lue 🗌
Exce	otion Handli	ing:						Save at F	Powerdow	n 🗌
Speci	al Features	:								
	nput may be									
The s	ne signal is sent due to user interaction and has no timeout on the input side									

# 2.2.4.12 Input TempDHWSetpUser

## **Standard Mode:**

DP	Name: TempDHWSetpUser Abbr.: Mandatory												
FΒ	Name:	DH۱	NSM						Can be	internal			
De	scription												
Thi	is input sign	al fr	om a HMI	contains	the actual DHV	V setpoin	t for 'N	Iormal' DH	IW operati	on mode	!		
rec	quested by t	he ι	ıser. This ir	nput valu	ue will be used t	o genera	te Ten	npDHWSe	tpSetEff.N	ormal ou	ıtput		
val	ue . See als	so cl	napter 2.2.1	1									
	Datapoint Type												
DP	PT_Name:	DF	PT_Value_	Temp									
DP	DPT Format: F <sub>16</sub> DPT_ID: 9.001												
Fie	eld	De	escription					Supp.	Range	Unit	Default		
									full	°C	CS		
AC	cess Type												
<b>♦</b>	Input												
	$N \rightarrow this$			$1 \rightarrow th$	is 🗵								
	Spontaneo	us			Cyclically:			Time-	out:				
	Request				Polling:			Perio	d:				
Co	mmunicati	on <sup>-</sup>	Гуре										
<b>♦</b>	Group Ob	ect	Datapoint						Mandatory	<b>/</b> : 🛛			
	Default Gro	up /	Address:										
Dy	namics												
	Power dow	n:	Save:										
	Power up:		Value:	No in	itialisation:		Defau	ılt value:					
				Save	d value:								
							Read	from bus:					
Ex	Exception Handling												
Sp	ecial Featu	res		•			•						
	_							•					

### LTE-HEE mode:

FB: DHWSM LTE C	lient Input Name:	ent Input Name: TempDHWSetpUser						latory 🗌 tional 🖂	
Description:							<u></u>	tional 🖂	
This input signal from a H	MI in the same DHW	/ Zone conta	ains the	actual	DHW	setpoint	for 'Norm	al' DHW	
operation mode requested					enerat	e			
TempDHWSetpSetEff.No		ee also cha	pter 2.2.						
	npHVACAbs_Z Description	DPT ID	205.100	Da	tatype	format	$V_{16}Z_{8}$		
Field	Unit	Default							
Temperature	DHW temperature		ue, 'Norr	mal' lev	vel	M	°C	cs	
Status	standard Status att					M	bitset		
- OutOfService	void setpoint value					M	bool	false	
- all other flags	not supported					NA	bool		
Communication:							-		
Binding Group:									
Class	Туре				Defau	ılt			
Geographical 🔲									
Application Specific⊠	DHWZone (Contro	ller)			1				
Unassigned	Broadcast	Configura	able 🗌						
DP Address:	IO Type(ID):	181 (UDH\	NSET)	Prope	erty ID	:	52		
LTE-Service (event):	InfoReport Sniffer	on Binding	Group:		-	-			
InfoReport 🖂	Timeout:			Min					
LTE-Service (polling): Read – Response	Read Wildcard / Re	esp Sniffer o	n Bindir	ng Gro	up: -	-			
Value after Powerup:	Default \	Value ⊠			* <del>=</del>	(	Stored Va	lue 🗌	
Exception Handling: Save at Powerdown									
n case of missing input data or value 'OutOfService' the DHWSM will use the									
TempDHWSetpSet.Norm	al parameter as defa	ult value to	generate	e Temp	DHW	SetSetE	ff[4] outpu	ıt	
Special Features:									
This input may be device-									
The signal is sent due to	user interaction and I	has no timed	out on th	e inpu	t side				

# 2.2.4.13 Input DHWPushUser

## **Standard Mode:**

DP Name:	DHWPushUse	r	Abbr.:		Manda	tory	
FB Name:	DHWSM				Can be	interna	
Description							
see LTE-HEE	Mode						
<b>Datapoint Ty</b>	ре						
DPT_Name:	DPT_Trigger						
DPT Format:	B <sub>1</sub>			DPT_ID:	01.017		
Field	Description			Supp.	Range	Unit	Default
					{0,1}	bool	0
<b>Access Type</b>							
♦ Input							
$N \rightarrow this$		$1 \rightarrow \text{this}$					
Spontaneo	ous 🛛	Cyclically:		Time-	-out:		
Request		Polling:		Perio	d:		
Communicat	ion Type						
♦ Group Ob	ject Datapoint				Mandatory	<i>r</i> : 🛛	
Default Gr	oup Address:						
Dynamics	•						
Power dov	vn: Save:						
Power up:	Value:	No initialisation:	] D	efault value:			
		Saved value:					
			R	ead from bus:			
<b>Exception Ha</b>	andling						
<b>Special Feat</b>	ures						
		if condition for a DHW	push occurr	ed: the datapo	oint value is	s 1 = 'trio	gger'.
		not transmitted and wou				`	

## Hot Water Heating

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

FB:	DHWSM	LTE Cli	ent Input Name:	DHWPush	User				Mand Op	latory ☐ tional ⊠
Desci	ription:	<u>-</u>	<u>,                                      </u>							
load o	of the DHW sting mode).	storage ta After rece	led by HMI once on a ank (once to 'Normal eption of a DHWPus = enabled; see also o	' temperatı hUser sign	ire level, al the Di	indep	ender	nt of the	e actual DH\	N
DPT:	Name [	OPT_Trig	ger	DPT ID	1.017		tatype mat	;	B <sub>1</sub>	
Field			Description					Sup.	Unit	Default
									enum.	0
Comr	nunication:							_	-	
	ding Group	:								
Clas			Туре				Defa	ult		
	eographical									
	plication Sp	ecific⊠	DHWZone (Controll		<u></u>		1			
	assigned		Broadcast	Configura						
	Address:		IO Type(ID):	181 (UDH		Prope	erty ID	):	53	
	-Service (e	vent):	InfoReport Sniffer	on Binding			-	-		
	oReport	<u> </u>	Timeout:			Min				
	<b>-Service (p</b> ead – Respo		Read Wildcard / Re	sp Sniffer o	on Bindir	ng Gro	up: -			
Value	after Powe	er-up:	Default V	alue 🛚					Stored Val	ue 🗌
Exce	otion Handl	ling:					9	Save a	t Powerdow	n 🗌
	· · · · · · · · · · · · · · · · · · ·									
	al Features									
			ed once if condition							=
	er'. Value = ( nput may be		ion') is normally not t	ransmitted	and wo	uld be	ignore	ed by th	ne receiver!	
11113 11	ipat may be	, GC VICC-II	itorriai							

# ${\bf 2.2.4.14\ Parameter:\ DHWZone\_Controller}$

FB:	DHWSM	Prop	ert	ty Name ( <u>Server</u> ):	DHWZone	e_Contro	ller				datory 🔯
										Op	otional 🔲
Desc	ription:	<u>-</u>								<del>-</del>	
LTE z	one: DHW	Zone nu	ım	ber, link with the FB	3's in the [	DHW cont	roller	circuit			
DPT:	Name	DPT_U	CO	untValue8_Z	DPT ID	202.002	D	atatype form	at	U <sub>8</sub> Z <sub>8</sub>	
Field				escription			Sup	. Range	U	Unit	Default
Coun	terValue		n	umber of DHW Zone	е		М	131	-	-	1
Status bitset							oitset				
- OutOfService zone active /inactive O true/false							false				
- all o	- all other flags not supported, fixed to '0'				NA						
Comr	nand		Ī -						E	enum	
- Norr	malWrite						M				
- SetC	DSV & Res	etOSV	s	et zone inactive / ac	tive		Ο				
- all o	ther comm	ands	n	ot supported			NA				
Comr	nunication	າ:	-					<del></del>			
DP.	Address:			IO Type(ID):	176 (DHV	VSM)	Pro	perty ID:	•	101	
(in t	he server)	)		Start-Index:	1		N° c	of elements		1	
Pro	perty acce	ess:		Read only		Read/W	rite	$\boxtimes$			
Pro	tection			Read level			Writ	e level	-		
Exce	ption Hand	dling:	٧	alue after Powerup:	Stored	Value 🛚	Act	Value 📗 🏻 🗈	Defa	ault Value	e 🗌
Spec	ial Feature	es:									
The c	orrespondi	ng DHW	SI	M DP's are not LTE	communic	ating if D	$\overline{HWZ}$	one_Controll	er is	s 'OutOf	Service'.

## 2.2.4.15 Parameter: DHWZone\_Scheduler

FB:	DHWSM	Prop	erty Name ( <u>Server</u> ):	DHWZone	_Sched	uler				datory 🔲
									Or	otional 🔀
Desc	ription:	-							<u>-</u>	
LTE 2	zone: DHW	Zone n	umber, link with a DHV	V schedule	r					
DPT:	Name	DPT_U	lcountValue8_Z	DPT ID	202.002	2 [	Data	atype format	$U_8Z_8$	
Field			Description			Sup		Range	Unit	Default
Coun	terValue		number of DHW Zone	e		M		131		1
Status bitset						bitset				
- OutOfService zone active /inactive O true/false						false				
- all other flags not supported, fixed to '0' NA										
Comr	Command enum									
- Nor	malWrite					M				
- Set	DSV & Res	etOSV	set zone inactive / ac	tive		0				
- all o	ther comm	ands	not supported			NA	١.			
Com	municatio	n:			•				•	-
DP	Address:		IO Type(ID):	176 (DHW	/SM)	Pro	per	ty ID:	102	
(in t	he server	)	Start-Index:	1		N° (	of e	elements	1	
Pro	perty acce	ess:	Read only		Read/W	rite/		$\boxtimes$		
Exce	ption Hand	dling:	Value after Powerup:	Stored '	Value 🛚	Act	: Va	lue 🔲 De	efault Valu	e 🗌
	·									
Spec	pecial Features:									
The i	ne implementation of this parameter is optional. If implemented the DHWSM may receive the									
inforn	formation from an "external" DHW scheduler in a different DHWZone. If not implemented, the parameter									
DHW	Zone_Con	troller is	valid for all inputs and	outputs of	the RSM	IHD.			•	
The c	orrespondi	ina DHV	VSM DP's are not LTF	communic	ating if D	HW7	<sup>7</sup> on	e Schedule	r is 'OutOf	Service'

## 2.2.4.16 Parameter TempDHWSetpLegioProtect

FB:	DHWSM		erty Name	Te	mpDHWSe	etpLegiol	Protect	t		datory 🔲
		(Serv	<u>er</u> ):						Op	tional 🛚
Desci	ription:	-							·-	
DHW	temperatu	re setpoi	nt for 'LegioProt' o	per	ating mode	)				
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 setpe	oint	value		M	cs	° C	cs 1)
Status	3								bitset	
- all fla	ags		not supported, fix	ed t	to '0'		NA			
Comn	nand								enum	
- Norr	nalWrite						M			
- all of	ther comm	ands	not supported				NA			
Comr	nunicatio	n:				_				
DP A	Address:		IO Type(ID):		176 (DHW	/SM)	Prope	rty ID:	110	
(in t	he server)		Start-Index:		1		N° of	elements	1	
Pro	perty acce	ess:	Read only			Read/W	rite	$\boxtimes$		
Prot	ection		Read level				Write	level		
Excep	otion Hand	dling:	Value after Powe	rup:	Stored \	Value 🛚	Act Va	alue 🔲 De	fault Value	e 🗌
Speci	al Feature	es:								
1) reco	mmended	default v	/alue: 65°				•			

## 2.2.4.17 Parameter TempDHWSetpNormal

FB:	DHWSM	Prope (Serv	erty Name er):	Tei	mpDHWS	etpNorma	al			datory 🛚
Desci	ription:	1(33.3	<u></u> /-						<u> </u>	
DHW	temperatu	re setpoi	nt for 'Normal' ope	erati	ng mode					
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 setp	oint	value		М	cs	° C	cs 1)
Status	3								bitset	
- all fla	ags		not supported, fix	ed t	:o '0'		NA			
Comn	nand								enum	
- Norr	nalWrite						М			
- all o	ther comm	ands	not supported				NA			
Comr	nunicatior	<b>า</b> :								
DP A	Address:		IO Type(ID):		176 (DHW	VSM)	Prope	•	111	
(in t	he server)	)	Start-Index:		1		N° of e	elements	1	
Pro	perty acce	ss:	Read only			Read/W	rite	$\boxtimes$		
Prot	ection		Read level				Write	level		
Exce	otion Hand	dling:	Value after Powe	rup:	Stored	Value 🛚	Act Va	alue 🔲 De	fault Value	e 🗌
	al Feature									
1) reco	mmended	default v	/alue: 55°			•		•	•	

## 2.2.4.18 Parameter TempDHWSetpReduced

FB:	DHWSM	Prop	erty Name	Te	mpDHWSe	etpReduc	ed		Man	datory 🗌
		(Serv	<u>/er</u> ):						Op	tional 🛚
Desci	ription:	-						÷		
DHW	temperatu	re setpo	int for 'Reduced' o	pera	ating mode	!				
DPT:	Name	DPT_H	VACTempAbs_Z		DPT ID	205.100	Data	atype format	$V_{16}Z_{8}$	
Field			Description				Sup.	Range	Unit	Default
Temp			temperature setp	oint	value		М	cs	°C	cs 1)
Status	3								bitset	
- all fla	ags		not supported, fix	ed t	to '0'		NA			
Comn									enum	
	nalWrite						М			
	ther comm		not supported				NA			-
Comr	nunicatio	n:								
DP A	Address:		IO Type(ID):		176 (DHV	VSM)	Prope	,	112	
(in t	he server	)	Start-Index:		1		N° of e	elements	1	
Pro	perty acce	ess:	Read only			Read/W	rite	$\boxtimes$		
Prot	tection		Read level				Write	level		
Exce	otion Hand	dling:	Value after Powe	rup:	Stored	Value 🛚	Act Va	alue 🔲 🛮 De	fault Value	e 🗌
Speci	ial Feature	es:								
1) reco	ommended	l default	value: 40°							

## 2.2.4.19 Parameter TempDHWSetpOff/FrostProtect

FB:	DHWSM	Prope (Serve	erty Name er):	Temp	DHWSetp	Off/Frost	Protec	t		datory 🗌
Desci	ription:								<u> </u>	
DHW	temperatur	e setpoi	nt for 'Off/Frost	Protec	t' operating	g mode				
DPT:	Name	DPT_H\	/ACTempAbs_	Z	DPT ID	205.100	Dat	atype format	V <sub>16</sub> Z <sub>8</sub>	
Field			Description				Sup.	Range	Unit	Default
Temp			temperature s	etpoint	value		M	cs	° C	cs 1)
Status	3								bitset	
- all fla	ags		not supported	, fixed t	to '0'		NA			
Comn	nand								enum	
	nalWrite						M			
- all of	ther comma	nds	not supported				NA			
Comr	nunication	:								
DP /	Address:		IO Type(ID):		176 (DHV	VSM)	Prope	rty ID:	113	
(in t	he server)		Start-Index:		1		N° of	elements	1	
Pro	perty acces	ss:	Read only			Read/W	rite	$\boxtimes$		
Prot	ection		Read level				Write	level		
Excep	otion Hand	ling:	Value after Po	werup:	Stored	Value 🛚	Act Va	alue 🔲 🛮 De	fault Value	e 🗌
Speci	al Feature	s:								
1) reco	mmended	default v	/alue: 5°							

## 2.3 Functional Block: Domestic Hot Water Controller (DHWC)

### 2.3.1 Functional Specification

#### 2.3.1.1 DHW temperature control

Load of a Domestic Hot Water circuit is controlled by a DHW Controller (DHWC) according to the requested actual hot water temperature setpoint and the actual temperature value(s) of the DHW storage tank.

DHW control loop mechanisms, load strategies and calculation methods for the flow temperature setpoint are company-specific and not part of this specification.

Optionally the DHWC may incorporate local optimizer functions like start/stop optimization for DHW load. These optimization functions are company specific and not part of the DHWC specification

#### The DHWSM provides information for the DHWC for DHW setpoint calculation:

_	'DHWModeEff'	Contains the currently	effective DHW o	perating mode from DHWSM
---	--------------	------------------------	-----------------	--------------------------

which may depend on automatic time schedule, local user operation

(MMI) etc.

- 'DHWModeEffNext' Contains the next DHW operating mode and the delay time until

change of mode (according to advanced scheduling information, local

user operation etc.)

=> used in the DHWC for local optimiser functionality

'TempDHWSetpSetEff(4)' The effective temperature setpoints from DHWSM for the four

different DHW operating modes: 'LegioProtect', 'Normal', 'Reduced'

and 'Off/FrostProtect' (set of setpoints).

- 'TempDHWSetpEff' The currently effective DHW temperature setpoint from DHWSM

(For simple DHW applications; no usage of DHWModeEff.)

- 'DHWPush' This signal provided by the DHWSM indicates that the DHW storage

tank must be loaded once to 'Normal' temperature level, independent

of the actual DHW operating mode

#### Interaction with an external HVAC Optimizer: see also chapter 2.1.3

'DHWModeOptim' Contains the optimised 'DHWMode' to be used in the DHWC instead

of the 'DHWModeEff'

- 'TempDHWSetpOptimShift' delta correction value to be added in the DHWC to the actual DHW

temperature setpoint

**DHW temperature setpoint calculation:** For DHW load, the DHWC calculates the DHW temperature setpoint according to:

- 'TempDHWSetpEff' in very simple systems which are not based on DHWMode information
- 'DHWModeEff' or 'DHWModeOptim' (has priority) and the the corresponding setpoint from 'TempDHWSetpSetEff(4)'
- the temperature offset 'TempDHWSetpOptimShift' provided by a central HVAC Optimizer
- local max. and min. DHW temperature limits: The DHWC is responsible that the DHW temperature setpoint is limited to these values. These values are neither checked in the DHWSM nor in a HVAC Optimizer.

#### **Further inputs for DHW control are:**

'TempDHW' The actual DHW temperature from a DHWTS. Normally two

independent sensors are connected: DHW High (start) and DHW Low

(stop) sensors. Usually the DHW sensors are hard wired.

Instead of the sensors also hard wired DHW thermostat(s) are

possible.

'StatusHPM' see chapter 2.3.1.7

'StatusSDHWC' Contains information about availability of solar energy if a solar

> DHW controller is present in the DHWZone. This signal is used in the DHWC to disable conventional DHW load if sufficient solar energy is

available.

'LockSign...' / 'ForceSign...' The DHWC consumes locking and forcing signals from the HFDM

> and HPM, taking them into consideration by controlling the energy consumption of the DHW load procedure. See chapters 2.3.1.8..

2.3.1.11 and document [09]

'DHWOtherEnergySource' This signal indicates, that another DHW source is active (e.g. electric

DHW load) and that load by the DHWC should be disabled, see

chapter 2.3.1.3

#### 2.3.1.2 Flow temperature demand

The DHWC is connected to one Heat Distribution Segment. The DHWC calculates from the DHW temperature setpoint the corresponding flow temperature demand for its zone.

TempFlowWaterDemAbsDHW This mandatory output signal contains the calculated flow temperature demand (absolute value) of the DHWC which is sent to the HFDM in the Heat Distribution Segment.

> Calculation of the flow temperature demand is company-specific and not part of this specification. Normally a temperature offset is added to the DHW temperature setpoint to compensate temperature difference in the heat exchanger.

> The demand signal contains also attributes for load priority management (see chapter 2.3.1.12) and control of a common system pump in the Heat Distribution Segment (see chapter 2.3.1.14)

> The emergency demand 'EmergDem' attribute is also supported in the DHWC heat demand signal (optional feature). This attribute can be set by the DHWC to indicate a critical heat demand for frost protection if no heat is provided by the heat production system (e.g. because boiler is in 'summer mode' or manually switched off). If supported by the heat production system (HPM), the attribute 'EmergDem'=true will activate heat production in any case (override of e.g. local 'summer mode')

The 'DHWLegioReq' attribute is included in the DHWC 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)

'DHWLegioReq' information can be useful in the heat distribution system (HFDM) for optimized flow-/return temperature control. A pre-controller in the heat distribution system with active return temperature limitation can affect proper legionella protection due to reduced flow temperature to the DHWC. With 'DHWLegioReq' appropriate adaptation of the return temperature limitation can be managed by the heat distribution system

### 2.3.1.3 DHW energy source

DHW load during summer time is often done using electrical energy instead of conventional hot water supplied DHW load. The signal 'DHWOtherEnergySource' indicates whether load by DHWC is enabled or not. The function controlling electrical DHW load is located in the same device as DHWC and not part of this specification.

#### 2.3.1.4 Solar energy support

Conventional DHW load may be supported by solar DHW load. DHW load mechanism can be influenced by the availability of solar energy. Usually conventional DHW load by the DHWC will be reduced or stopped, if sufficient solar energy is available (decision of DHWC).

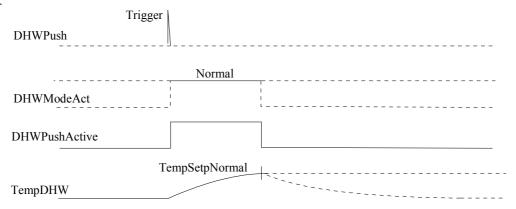
- The SDHWC provides the 'StatusSDHWC' containing information about availability of solar energy and 'TempCollectorAct' of the Flat plate/tube collector
- The DHWC provides attributes in 'StatusDHWC' indicating whether conventional DHW load by DHWC is stopped or reduced because of solar DHW load.

#### 2.3.1.5 DHW Push

This command from the DHWSM indicates that the DHW storage tank must be loaded once to 'Normal' temperature level, independent of the actual DHW operating mode (DHWModeEff or DHWModeOptim). This signal is provided by the DHWSM only on event (no heartbeat) after reception of a DHWPushUser signal if heat production is enabled (EnableDHWPrep = true).

DHWPush has also an influence on the actual DHW mode in the DHWC: => DHWModeAct = 'Normal' during DHWPush

Example:



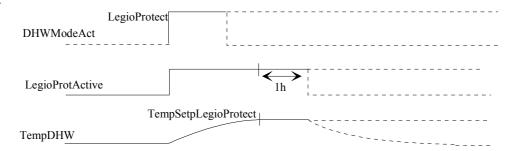
#### 2.3.1.6 Legionella Protection

This function has similar behavior as "DHWPush". Change from other DHW operating modes to LegioProtect mode is like a trigger for the DHWC to load DHW until the LegioProtect setpoint is reached and maintained during 1 hour.

If LegioProtect operating mode is only active for a short time (e.g. less than one hour) this can be considered as a trigger to start the legionella protection procedure as described above.

If LegioProtect operating mode is active for several hours (i.e. longer than the loading and hold time) this leads to a prolongation of the legionella protection procedure.

Example:



In case of LegioProtect mode the 'DHWLegioReq' attribute can be set in the DHWC heat demand signal (optional feature) for optimized flow-/return temperature control by the heat distribution system (HFDM), see 2.3.1.2

### 2.3.1.7 Usage of StatusHPM by the DHWC

The signal StatusHPM which is provided by the HPM / HFDM informs the DHWC e.g. if the heat production is on and is able do provide energy. This information is used in the DHWC e.g. in order to avoid unloading of the DHW storage tank if heat production is not ready. This information may also be used in the DHWC for local optimization purpose and "learning-functions". These functions are company-specific.

### 2.3.1.8 Usage of LockSignHPM by the DHWC

If the DHWC receives a critical locking signal from the HPM the DHWC will stop/reduce DHW load according to the % reduction factor in any case.

If the DHWC receives a uncritical locking signal from the HPM the DHWC may stop/reduce DHW load according to the % reduction factor if the DHWC has not requested load priority.

IMPORTANT: LockSignHPM must NOT have an influence on the calculation of the flow temperature demand signal (otherwise system may "oscillate")

Usage of LockSignHPM is an optional feature of the DHWC. See also document [09]

#### 2.3.1.9 Usage of ForceSignHPM by the DHWC

Forcing signals of the type 'Protection' or 'Oversupply' from HPM are only accepted by the DHWC if either the attribute 'DHWLegio' or 'DHWNorm 'is set (activate DHW load).

- If the DHWC receives a critical forcing signal (type 'Protection') it will react in any case (unconditional load). If 'DHWLegio' attribute is set, DHW load shall be activated with 'LegioProtect' setpoint. If 'DHWNorm' attribute is set, DHW load shall be activated with 'Normal' setpoint
- If the DHWC receives a uncritical forcing signal (type 'Oversupply') it <u>may react or may ignore</u> the signal (conditional load). Forcing signal could e.g. be ignored if solar DHW load is currently active. If the signal is accepted, the reaction is the same as for type 'Protection', see above

If the DHWC receives a forcing signal with the type 'Overrun' immediately after load shutdown it will temporarily keep the last flow temperature setpoint (used before shutdown) for control loop (pump overrun). So remaining energy in the heat producer / heat exchanger is efficiently used after load shutdown.

IMPORTANT: Forcing signals must NOT have an influence on the calculation of the flow temperature demand signal of the DHWC (otherwise system may "oscillate")

Implementation of ForceSignHPM is an optional feature of the DHWC. . See also document [09]

#### 2.3.1.10 Usage of LockSignHFDM in the DHWC

same procedure as for LockSignHPM, see chapter 2.3.1.8

#### 2.3.1.11 Usage of ForceSignHFDM in the DHWC

same procedure as for ForceSignHPM, see chapter 2.3.1.9

#### 2.3.1.12 DHW Load Priority Management

In many applications DHW load priority is requested. Absolute or shift load priority can be requested by the DHWC by setting the attributes 'AbsLoadPriority' or 'ShiftLoadPriority' in the TempFlowWaterDemAbsDHW signal.

Load Priority between the consumers within a Heat Distribution Segment is controlled by the HFDM according to priority attributes in the received heat demand signals. If <u>absolute load priority</u> is requested by one or a class of consumers, the HFDM will send a 'uncritical' locking signal LockSignHFDM with 100% power reduction value to the consumers in the Heat Distribution Segment.

If the HFDM can not provide the requested flow temperature (e.g. in a heat-exchanger) and if a consumer requests shift load priority the HFDM will send an 'uncritical' locking signal LockSignHFDM with X % power reduction value. See also documents [08] and [09]

If the heat production system can not provide the requested boiler- / flow temperature and if a consumer requests shift load priority the HPM will send an 'uncritical' locking signal LockSignHPM with X % power reduction value. See also documents [07] and [09]

#### 2.3.1.13 DHW load actuators

DHW load pump and mixing/switching valve are hard wired to the DHWC. Connection of intelligent pump/valve via bus is possible but not part of this specification.

#### **2.3.1.14 System pump**

In larger system a common System Pump is usually installed in the Heat Distribution Segment to provide water flow in the Segment. The System Pump is normally controlled by the HFDM, see document [08]. The DHWC has usually its own load pump (see chapter 2.3.1.13) but depending on the hydraulic system the DHWC may need the activation of the common System Pump for DHW load. In this case the DHWC will set the 'SystemPumpReq' attribute in the TempFlowWaterDemAbsDHW signal if it has a valid heat demand.

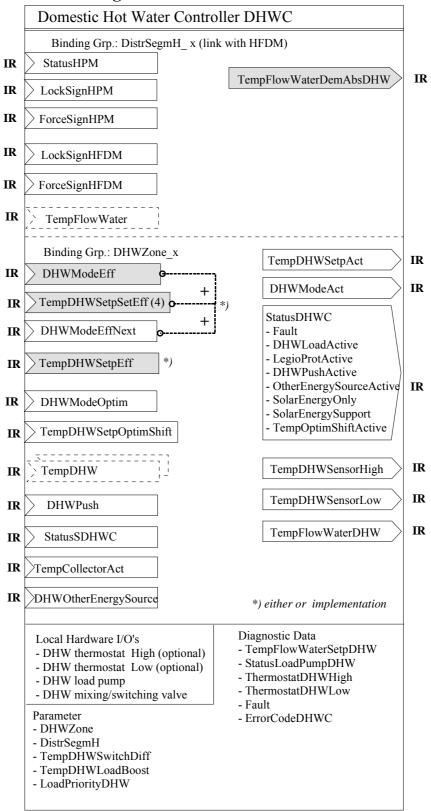
#### 2.3.1.15 Common flow temperature

The common flow temperature 'TempFlowWater' in the Heat Distribution Segment is an optional input signal to the DHWC. It may be used to check the flow temperature before DHW loading in order to avoid unloading of the DHW storage tank.

#### 2.3.2 Constraints

There is only one DHWC in one DHWZone.

### 2.3.3 Functional block diagram



# 2.3.4 Datapoint description

## **2.3.4.1** Overview

Datapoint	Description	Datapoint Type	DPT N°
Outputs			
TempFlowWaterDemAbsDHW	Flow temperature demand of the DHWC to be sent to the allocated HFDM	DPT_ TempFlowWaterDemAbs	210.100
TempDHWSetpAct	Actual DHW temperature setpoint / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
DHWModeAct	Actual active DHW mode used by the DHWC / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
StatusDHWC	Status attributes of DHWC	DPT_StatusDHWC	22.100
- Fault	failure, some error in the DHWC (S-interface)	DPT_Bool	1.002
- DHWLoadActive	actual DHW load status: on / off (S-interface)	DPT_Bool	1.002
- LegioProtActive	legionella protection procedure active (load & hold) / (S-interface)	DPT_Bool	1.002
- DHWPushActive	DHW load due to DHW Push is active (S-interface)	DPT_Bool	1.002
- OtherEnergySourceActive	load by DHWC is disabled due to other active energy source, e.g. electrical (S-interface)	DPT_Bool	1.002
- SolarEnergyOnly	load by DHWC is disabled due to sufficient solar energy (S-interface)	DPT_Bool	1.002
- SolarEnergySupport	DHW load is partly done by solar energy (S-interface)	DPT_Bool	1.002
- TempOptimShiftActive	actual DHW temp setpoint is influenced by TempDHWSetpOptimShift $\neq 0$ (S-interface)	DPT_Bool	1.002
TempDHWSensorHigh	actual DHW temperature sensor with higher position/temperature (DHW start temp) / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempDHWSensorLow	actual DHW temperature sensor with lower position/temperature (DHW stop temp) / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempFlowWaterDHW	Actual water flow temperature for DHW load / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Inputs			
StatusHPM	Status information from 'Producer Manager'	DPT_StatusHPM	209.100
ForceSignHPM	Forcing signal from HPM due to overheat, to force the consumers to consume energy	DPT_ForceSign	21.100
LockSignHPM	Locking signal from HPM due to boiler overload, to force the consumers to reduce energy consumption	DPT_LockSign	207.101
ForceSignHFDM	Forcing signal from HFDM in the Heat Distribution Segment	DPT_ForceSign	21.100
LockSignHFDM	Locking signal from HFDM in the Heat Distribution Segment	DPT_LockSign	207.101
TempFlowWater	Common flow temperature of the hydraulic group, Heat Distribution Segment / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
DHWModeEff	present/active 'DHWMode' from DHWSM	DPT_DHWMode_Z	201.102

Datapoint	Description	Datapoint Type	DPT N°
TempDHWSetpSetEff [4]	set of effective DHW temperature setpoints for 'LegioProt', 'Normal', 'Reduced' and 'Off/Protection' operating modes from DHWSM	DTP_TempDHWSetpSet[4]	213.101
DHWModeEffNext	next DHW operating mode and time until change of mode from DHWSM	DPT_DHWModeNext	206.102
TempDHWSetpEff	present/effective DHW temperature setpoint from DHWSM / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
DHWModeOptim	optimized DHW mode from external HVAC Optimizer	DPT_DHWMode_Z	201.102
TempDHWSetpOptimShift	DHW temp. setpoint shift from external HVAC Optimizer / LTE and S-interface	DPT_TempHVACRel_Z DPT_Value_Tempd	205.101 9.002
TempDHW	Actual DHW storage tank temperature value(s). Two independent high / low sensors are possible - each sending its temperature value / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
DHWPush	DHW push command from DHWSM	DPT_Trigger	01.017
DHWOtherEnergySource	Status information from MMI etc. to indicate that another source for DHW load is active => disable load by DHWC	DPT_Bool	1.002
StatusSDHWC	indicates whether solar energy for DHW load is available or not	DPT_StatusSDHWC	21.103
TempCollectorAct	Solar flat plate/tube collector temperature from SDHWC / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
Parameters			
DHWZone	LTE zone: DHW zone number	DPT_UcountValue8_Z	202.002
DistrSegmH	LTE zone: number of the Heat Distribution Segment	DPT_UcountValue8_Z	202.002
TempDHWSwitchDiff	DHW switching differential temperature	DPT_TempHVACRel_Z	205.101
TempDHWLoadBoost	DHW loading boost temperature	DPT_TempHVACRel_Z	205.101
LoadPriorityDHW	DHW load priority: none, shift, absolute	DPT_LoadPriority	20.104
Diagnostic Data			
TempFlowWaterSetpDHW	Actual flow temperature setpoint for DHW load	DPT_TempHVACAbs_Z	205.100
StatusLoadPumpDHW	actual relative power of the DHW load pump, % value; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001
ThermostatDHWHigh	status of the DHW thermostat with higher position / temperature	DPT_Switch	1.001
ThermostatDHWLow	status of the DHW thermostat with lower position / temperature	DPT_Switch	1.001
Fault	failure, some error in the DHWC	DPT_Bool	1.002
ErrorCodeDHWC	company specific numeric error code	DPT_Value_2_Ucount	7.001

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

			STANDARD MODE	EXTEN MO	
		Basic FB	S-Mode	Standard Mode Interface	HEE
Outputs	TempFlowWaterDemAbsDHW	<b>NA</b> 1)	NA	NA	M
	TempDHWSetpAct	(GO <sub>b</sub> )		(GO)	О
	DHWModeAct	(GO <sub>b</sub> )		(GO)	О
	StatusDHWC	<b>NA</b> 1)	NA	NA	О
	- Fault	(GO <sub>b</sub> )		(GO)	NA
	- DHWLoadActive	$(GO_b)$		(GO)	NA
	- LegioProtActive	(GO <sub>b</sub> )		(GO)	NA
	- DHWPushActive	$(GO_b)$		(GO)	NA
	- OtherEnergySourceActive	(GO <sub>b</sub> )		(GO)	NA
	- SolarEnergyOnly	(GO <sub>b</sub> )		(GO)	NA
	- SolarEnergySupport	$(GO_b)$		(GO)	NA
	- TempOptimShiftActive	$(GO_b)$		(GO)	NA
	TempDHWSensorHigh	(GO <sub>b</sub> )		(GO)	О
	TempDHWSensorLow	$(GO_b)$		(GO)	О
	TempFlowWaterDHW	$(GO_b)$		(GO)	О
Inputs	StatusHPM	<b>NA</b> 1)	NA	NA	О
	ForceSignHPM	<b>NA</b> 1)	NA	NA	О
	LockSignHPM	<b>NA</b> 1)	NA	NA	О
	ForceSignHFDM	<b>NA</b> 1)	NA	NA	О
	LockSignHFDM	<b>NA</b> 1)	NA	NA	О
	TempFlowWater	(GO <sub>b</sub> )		(GO)	О
	DHWModeEff	<b>NA</b> 3)	NA	NA	M 2)
	TempDHWSetpSetEff [4]	<b>NA</b> 1)	NA	NA	M 2)
	DHWModeEffNext	<b>NA</b> 1)	NA	NA	O 2)
	TempDHWSetpEff	$GO_b^{2)}$	GO <sup>2)</sup>	GO <sup>2)</sup>	M 2)
	DHWModeOptim	<b>NA</b> 3)	NA	NA	О
	TempDHWSetpOptimShift	(GO <sub>b</sub> )		(GO)	О
	TempDHW	(GO <sub>b</sub> )		(GO)	О
	DHWPush	(GO <sub>b</sub> )		(GO)	О
	DHWOtherEnergySource	(GO <sub>b</sub> )		(GO)	О
	StatusSDHWC	<b>NA</b> 1)	NA	NA	О
	TempCollectorAct	(GO <sub>b</sub> )		(GO)	О

Table 4: DHWC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DHWZone	M
	DistrSegmH	M

**Table 5: DHWC LTE specific Properties** 

		Support
Parameter	TempDHWSwitchDiff	О
	TempDHWLoadBoost	О
	LoadPriorityDHW	О
		О
Diagnostic Data	TempFlowWaterSetpDHW	О
	StatusLoadPumpDHW	О
	ThermostatDHWHigh	О
	ThermostatDHWLow	О
	Fault	О
	ErrorCodeDHWC	О
		О

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

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

2) Either implementation of { DHWModeEff + TempDHWSetpSetEff [4] (+ DHWModeEffNext) } or { TempDHWSetpEff }.

<sup>3)</sup> Implementation of DHWModeEff or DHWModeOptim inputs only without TempDHWSetpSetEff [4] does not make sense

## 2.3.4.2 Output TempFlowWaterDemAbsDHW

Standard mode: NA

FB:	DHWC	LTE Serv	ver Output Name:	Mandatory ⊠ Optional □						
Daga	rintianı								1 0	ptional <u> </u>
	ription:	nal contair	ns the calculated flo	w temperatur	e dema	nd (	ahsolute	value) of	the DHV	NC It is
			corresponding Heat							
	nd: see ch					•			от тотро	
DPT:	Name		empFlowWaterDem/	A DPT ID	210.10	0	Datatype	e format	V <sub>16</sub> B <sub>16</sub>	
Field		100	Description		Sup.	Ra	nge	Unit	COV	Default
	FlowDem		requested flow tem	perature for	M		temp.	°C	2	CS
			DHW load		]		nge .			
Attribu										
- Dem	nandValid		Validity of TempFlo (false means also "NoDemand")	owDem	M	tru	e/false	bool	Y	false
- Absl	LoadPriori	ty	set if absolute load requested by the D		0	tru	e/false	bool	Y	false
- Shift	tLoadPrior	rity	set if shift load prio requested by the D	rity is	0	tru	e/false	bool	Y	false
- Max	TempLimi	it	set if flow temp. in Distribution Segme limited to max. valu	0	tru	e/false	bool	Y	false	
N 45 7	F 1		case for DHW load	)		6-1		11	,	6-1
- Min	FempLimit		for cold water only indicates that a DH	IVA/ circuit	NA M	fals	se e/false	bool bool	N N	false false
- חחי	vreq		has heat demand	IVV CII CUIL	IVI	แน	eriaise	DOOI	IN	laise
- Roo	mCtrlReq		for Room heating of	nlv	NA	fals	se	bool	Υ	false
- Vent			for Ventilation only		NA	fals		bool	Ň	false
	AllSeason	Req	for auxiliary heat co		NA	fals	se	bool	N	false
- Syst	:emPumpl	Req	only request for water c	0	tru	e/false	bool	Υ	false	
			the distribution seg							
_	_		(common system p			١.	<i>(</i> <b>6</b> .			
	ergDem		emergency heat de frost protection		0	true/false bool			Y	false
- DHV	VLegioRe	q	demand from DHW		0	tru	e/false	bool	N	false
			legionella function (can only be 'true' i							
			'true')	i Driwiteq –						
Comr	nunicatio	n:	1.00							
	ding Grou									
Clas		•	Туре				Defa	ult		
Ge	eographica	al 📗								
Ap	plication	Specific $oxtime X$					1			
	nassigned		Broadcast	Configura						
	Address:		IO Type(ID):	177 (DHW			roperty ID		51	
	-Services	`	COV 🛛	MinRepTim		1	0 sec	Hea	rtbeat:	15 min
	oReport	<u></u>	Output per defaul	lt communica	ting	В	inding Gr	oup Wild	card allov	ved $\square$
	TE Read-l			High 🗆				•		
	all always		Tx Prio:	High 🗌			Normal		Low	
	pported)		Transm after Pow	verup: Stored	l Value		Act Val	ue 🛛 🏻 I	Default Va	alue 🗌
Pro	perty-Ser ividual ad		Read only	$\boxtimes$	Read/\	Vrite	e [			
	ption Han		<u> </u>					Save	at Power	down□
	etter man	y.						Javo	OVVOI	
Speci	ial Featur	es:								

# 2.3.4.3 Output TempDHWSetpAct

## **Standard mode:**

DP I	P Name: TempDHWSetpAct Abbr.: Mandatory											
FB 1	Name:	DΗ\	NC						Can be	intern	al	
Des	cription											
			HW temperat	ure setpoint								
Data	apoint Typ	эе										
DPT	_Name:	DF	PT_Value_Te	mp								
DPT	Format:	F <sub>1</sub>	6					DPT_ID:	9.001			
Field	d	De	escription					Supp.	Range	Unit	Defau	ılt
									full range	°C	CS	3
Acc	ess Type											
<b>*</b>	Output											
t	$his \rightarrow M$			$nis \rightarrow 1$								
S	Spontaneo	us	⊠ COV:	$\boxtimes$	Δ-Value:	0.2 K	Mi	n repetition	on period:	10s		
			Cyclic	$  \boxtimes  $	Period:	15 Mi	n					
	Request											
Con	nmunicati	on <sup>-</sup>	Гуре									
<b>♦</b>	Group Obj	ect	Datapoint						Mandatory	/: 📗		
	Default Gro	oup /	Address:	-								
Dyn	amics											
F	Power dow	n:	Save:									
F	Power up:		Value:	No initialisat	tion:			ılt value:				
				Saved value				•	ot for input)			
			Transmit on	bus (only for	r output):		Read	from bus	(only for in	put):		
Exc	eption Ha	ndli	ng									
Spe	cial Featu	res										

### LTE-HEE mode:

FB:	DHWC	LTE S	Serve	er Output Name:	Te	empDHWS	etpAct				Mandatory ☐ Optional ⊠		
Desc	ription:				-								
		DHW	tem	perature setpoint o	of th	he DHW zo	ne						
DPT:	Name	DPT	_Ten	npHVACAbs_Z		DPT ID	205.10	0	Datatype	format	$V_{16}Z_{8}$		
Field			Des	cription			Sup.		nge	Unit	COV	Default	
Temp			tem	perature setpoint v	⁄alι	ıe	М	full		°C	0.2	cs	
Status				dard Status attribu		-							
	OfService			value: setpoint no			M		e/false	bool	Υ	true	
- Ove	rridden		setp false	oint value overrido	den	r true /	0	tru	e/false	bool	Υ	false	
- all o	ther flags			supported									
Comr				dard Command, w	vrite	e only							
- Ove	rride &			ride and release s		0							
Relea													
- all o			not s	supported		NA							
comm							<u> </u>	<u> </u>			<u>L</u>		
	nunicatio												
	ding Groເ	ıp:		<u> </u>									
Clas			_	Туре					Defau	ult			
	ographic		<u></u> _										
	plication	Specifi		DHWZone			····		1				
	assigned			Broadcast		Configura							
	Address:		- 11	IO Type(ID):		177 (DHW			roperty ID		52	45	
	-Services			COV 🛛		linRepTime		1	0 sec	Heart	beat:	15 min	
	oReport TE Read-l		⊠ nse	Output per defaul	IT C	ommunicat	ing	В	inding Gro	oup Wildc	ard allov	wed	
po	lling of the	e outpu	ıt	Tx Prio:		High 🗌			Normal [	$\overline{A}$	Low	· 🔲	
	all always pported)	be		Transm after Pow	ver	up: Stored	Value		Act Val	ue 🛛 D	efault V	alue 🗌	
Pro	perty-Ser	vice		Read only [	_		Read/V	\/ritc		1)			
(ind	ividual ad	ccess)	:	Read Offig L			Reau/v	VIILE					
Exce	otion Han	dling:								Save a	t Power	down	
	ial Featur												
				for Override / Rele		se function	only. If	Όv	erridden'	the DHW	C uses t	he	
ov	erride valı	ue for I	DHW	temperature cont	rol								

## 2.3.4.4 Output DHWModeAct

## **Standard mode:**

DP Name:	DHWModeAct	OHWModeAct Abbr.: Mandatory 🔲										
FB Name:	DHWC						Can be	interna	al 🗌			
Description												
	ntains the current				e DH	IWC (outp	ut used ma	ainly for				
	in the DHW Circ	culation Pump	o Controller	·)								
Datapoint Typ												
DPT_Name:	DPT_DHWMod	le				T						
DPT Format:	N <sub>8</sub>					DPT_ID:	20.103					
Field	Description	' ' '										
							14 <sup>1)</sup>		CS			
Access Type												
◆ Output												
this $\rightarrow$ M		his $\rightarrow$ 1										
Spontaneou	us 🛛 COV:		Δ-Value:		Min	repetition	period:	10sec				
	Cyclic	igtimes	Period:	15min								
Request												
Communication	on Type											
	ect Datapoint						Mandatory	<i>/</i> : 🛛				
	up Address:											
Dynamics												
Power down	n: Save:											
Power up:	Value:	No initialisat			efau	ılt value:						
		Saved value	):		ctua	l value:						
	Transmit on	bus:										
<b>Exception Ha</b>	ndling											
Special Featu												
'' value 0='Aut	o' is not allowed											

### LTE-HEE mode:

FB:	DHWC	LTE S	erver Output Name:	DHWMod	leAct					datory 🗌
	ription:	-		-					•	
			urrently active DHW I	Mode used	by the	DHWC	(used	mainly fo	r visuali	sation or
in the			mp Controller)							
DPT:	Name D	PT_DH	WMode_Z	DPT ID	201.10	2 Dat	tatype	format	$N_8Z_8$	
Field		Des	scription		Sup.	Range		Unit	COV	Default
DHWI	Mode	actı	ual DHW Mode		M	[14] 17	)		Υ	cs
Status	3	star	ndard Status attribute	:S						
	rridden	DH	W mode overridden t	rue / false	0	true/fal	lse	bool	Υ	false
- all of	ther flags		supported						ļ	
Comn			ndard Command, writ							
	rride &	ove	rride and release set	point	0					
Relea										
- all of		not	supported		NA					
comm										
	nunication:									
	ding Group:									
Clas			Туре				Defau	ılt		
	eographical	<u></u> _								
	plication Spe	ecific	DHWZone		<u></u> -		1			
	assigned		Broadcast	Configura						
	Address:		IO Type(ID):	177 (DHW		Prope			56	
	-Services (e			/linRepTime		10 se	ec	Heart	beat:	15 min
	oReport	$\boxtimes$	Output per default o	communicat	ing	Bindir	na Gra	oup Wildo	ard allov	wed $\square$
	ΓΕ Read-Res						_	-		
	lling of the ou		Tx Prio:	High 🗌		Nor	mal 🛭	<u> </u>	Low	
	all always be pported)		Transm after Power	rup: Stored	Value	□ Ad	ct Valu	ıe 🛛 D	efault V	alue 🗌
	perty-Servic ividual acce		Read only		Read/V	Vrite		2)		
	otion Handli		<u>I</u>					Save a	t Power	down
	<u> </u>							00.00		<u>uo</u>
Speci	al Features:									
	ue 'Auto' is n		ed							
			for Override / Releas	se function	only: if	'Overric	dden' t	he DHW	C uses ii	nternally
	d sends the				,		- '			- ,

## 2.3.4.5 Output StatusDHWC

**Standard mode:** separate boolean datapoints Fault, DHWLoadActive, LegioProtActive, DHWPushActive, OtherEnergySourceActive, SolarEnergyOnly, SolarEnergySupport, TempOptimShiftActive

#### LTE-HEE mode:

FB:	DHWC	LTE Se	erver Output Name:	StatusDHV	NC					datory ☐ otional ⊠
Descr	iption:									
Inform	ation prov	ided by t	he DHWC mainly for	visualizatior	n & mon	nitoring	e.g. on	an end-	user MM	II (e.g.
room		DDT O	( DI 114/0	DDTID	00.400					
DPT:	Name	DP1_St	atusDHWC	DPT ID	22.100			format		D ( 1)
Field			Description		Sup.	Range		<u>Jnit</u>	COV	Default
- Faul			DHWC has a failure		M	true/fa		oool	Y	false
	VLoadActiv	-	DHW load is currentl		0	true/fa		oool	Y	false
Ū	oProtActive		legionella protection active (load & hold)	•	0	true/fa		oool	Y	false
- DHV	√PushActiv	⁄e	true during DHW load by a 'DHWPush' com	d triggered nmand	0	true/fa	lse   t	oool	Y	false
- Othe	rEnergySc	ource	load by DHWC is dis		0	true/fa	lse l	oool	Υ	false
Activ			to other active energ							
			(e.g. electrical)	,						
- Sola	rEnergyOr	ıly	load by DHWĆ is dis	abled due	0	true/fa	lse l	oool	Υ	false
	0,		to sufficient solar ene							
- Sola	rEnergySu	pport	DHW load is partly d	one by	0	true/fa	lse l	oool	Υ	false
	•		solar energy							
- Tem	pOptimShi	ftActive	actual DHW temp se	tpoint is	0	true/fa	lse l	looc	Υ	false
			influenced by							
			TempDHWSetpOptin	nShift ≠ 0						
Comn	nunicatior	1:	-		-	•			· <del>·</del>	=
Bind	ding Group	o:								
Clas	S		Туре				Defaul	t		
	ographical									
Ap	plication S	pecific $oxtime $	DHWZone				1			
Un	assigned		Broadcast	Configura						
	Address:		IO Type(ID):	177 (DHW			erty ID:		55	
	-Services			MinRepTime		10 s	ec	Heart	beat:	15 min
	oReport ΓΕ Read-R	⊠ esponse	Output per default o	communica	ting	Bindir	ng Gro	up Wildo	ard allov	ved
	lling of the		Tx Prio:	High 🗌		Nor	rmal 🔀		Low	
	all always l oported)	oe .	Transm after Powe		l Value	A	ct Valu	e 🛛 D	efault Va	alue 🗌
Prop	perty-Serv		Read only		Read/V	Vrite				
	otion Hand							Save	at Power	down
	,							3010 0	01101	
Speci	al Feature	s:								

## 2.3.4.6 Output Fault

## **Standard mode**

DP	Name:	Faι	ult	Abbr.:				Manda	tory	
FB	Name:	DH	WC					Can be	intern	al
De	scription									
rep	orts a failu	e in	the DHWC; n	nainly used for visualis	sation					
Da	tapoint Ty	ре								
DP	PT_Name:	DI	PT_Bool							
DP	T Format:	B	1				DPT_ID:	1.002		
Fie	eld	D	escription				Supp.	Range	Unit	Default
										false
Ac	cess Type									
•	Output									
	this $\rightarrow$ M		⊠  th	nis $\rightarrow$ 1						
	Spontaneo	us	⊠ COV:	Δ-Value:		Min	repetition	period:	10s	
			Cyclic	Period:	15 Mir	n				
	Request		$\boxtimes$							
Ö	mmunicati	on '	Туре							
<b>*</b>	Group Ob	ject	Datapoint					Mandatory	<i>r</i> : 🛛	
	Default Gro	oup	Address:	•						
Dy	namics									
	Power dow	'n:	Save:							
	Power up:		Value:	No initialisation:		Defau	ılt value:		$\square$	
				Saved value:		Actua	I value (no	ot for input)	):	
			Transmit on	bus (only for output):		Read	from bus	(only for in	put):	
Ex	ception Ha	ndl	ing							
Sp	ecial Featu	ires	3							

## 2.3.4.7 Output DHWLoadActive

## Standard mode

DP Name:	DH	<del>lWLoadActi</del> v	ve	Abbr.:				Manda		
FB Name:	DH	łWC						Can be	e interna	al 🗌
Description										
indicates wh	ethe	r DHW load	is currently act	ive; mainl	y used fo	or visu	alisation			
<b>Datapoint T</b>										
DPT_Name:		PT_Bool								
DPT Format							DPT_ID:	1.002		
Field		Description					Supp. Range Unit Defa			Default
										false
Access Typ	е									
◆ Output										
$this \to M$		$oxtimes_{oximes_{oxtimes_{oxtimes_{otti$	this $\rightarrow 1$							
Spontane	eous		V:	Δ-Value:		Min	repetition	period:	10s	
		Cyc	clic 🖂	Period:	15 Mir	n				
Request										
Communica	ation	Туре								
		t Datapoint	_					Mandatory	y: 🛛 🖂	
	roup	Address:								
Dynamics										
Power do		Save:								
Power up	):	Value:	No initialisat				ılt value:			
			Saved value				•	ot for input		
		_	on bus (only for	r output):		Read	from bus	(only for in	put):	
Exception F	land	ling								
Special Fea	tures	S								
-										

## 2.3.4.8 Output LegioProtActive

## **Standard mode**

DP Name:	Leg	ioProtActiv	ve		Abbr.:				Manda	tory	
FB Name:	DH	NC							Can be	interna	al 🗌
Description											
indicates whe	ther	legionella	prote	ction proce	edure is a	ctive (lo	ad & ho	old); main	ly used for	visualis	sation
<b>Datapoint Ty</b>	ре										
DPT_Name:	DI	PT_Bool									
DPT Format:	B <sub>1</sub>							DPT_ID:	1.002		
Field	De	escription						Supp.	Range	Unit	Default
											false
<b>Access Type</b>	<del>)</del>										
◆ Output											
this $\rightarrow$ M		〗	this	$\rightarrow 1$							
Spontaneo	ous	$\boxtimes$ CC	DV:		Δ-Value		Min	repetition	period:	10s	
		Су	clic	$\boxtimes$	Period:	15 Mi	in				
Request											
Communicat	ion	Туре									
♦ Group Ob	oject	Datapoint							Mandatory	<i>r</i> :   🖂	
Default Gr	oup.	Address:									
Dynamics											
Power dov	vn:	Save:									
Power up:		Value:	Ν	o initialisat	tion:		Defau	ılt value:			
			S	aved value	e:	<u>l</u>	Actua	I value (n	ot for input)	):	
			on bu	is (only for	routput):		Read	from bus	(only for in	put):	
<b>Exception Ha</b>	andli	ing									
<b>Special Feat</b>	ures										

## 2.3.4.9 Output DHWPushActive

## Standard mode

DP Name:	DH	WPushActi	ve		Abbr.:				Manda		
FB Name:	DH	WC							Can be	e interna	al 🗌
Description											
reports wheth	ner D	HW load d	ue to DI	HW Pus	sh is activ	e or not	; mainly	used for	visualisati	on	
<b>Datapoint Ty</b>											
DPT_Name:		PT_Bool									
DPT Format:	_	<u> </u>						DPT_ID:			
Field	D	escription						Supp. Range Unit Defa			Default
											false
Access Type	•										
◆ Output		_									
this $\rightarrow$ M		<u> </u>	this -	1							
Spontane	ous	⊠ CC	V:		Δ-Value		Min	repetition	period:	10s	
			clic		Period:	15 M	in				
Request											
Communica	tion	Туре									
		Datapoint							Mandator	y: 🛛 🖂	
Default G	roup	Address:									
Dynamics											
Power do		Save:				_					
Power up:		Value:		nitialisat				ılt value:			
				ed value					ot for input		
		Transmit	on bus	only for	r output):		Read	from bus	(only for in	iput):	
<b>Exception H</b>	andl	ing									
Special Feat	ures										

## 2.3.4.10 Output OtherEnergySourceActive

## **Standard mode**

DP Name:	Ot	OtherEnergySourceActive Abbr.: Mandatory											
FB Name:	DH	HWC								Can be	interna	al 🗌	
Descriptio													
reports who				sabled	due to oth	ner activ	e energ	y source,	e.g	. electri	ical;		
mainly use		<u>/isualisat</u>	tion										
Datapoint													
DPT_Name		OPT_Boo	ol					1					
DPT Forma		3 <sub>1</sub>						DPT_ID:		1.002			
Field		Descripti	on					Supp.	Ra	nge	Unit	Default	
												false	
Access Ty	ре												
♦ Output													
this $\rightarrow N$	Л	$\boxtimes$	this -	<b>→</b> 1									
Spontar	Spontaneous COV:												
	Cyclic Period: 15 Min												
Reques													
Communic	cation	Туре											
♦ Group	Objec	t Datapo	oint						Ма	ndatory	/: X		
Default	Group	Addres	s:										
<b>Dynamics</b>													
Power of	lown:	Save:											
Power u	ıp:	Value	: No i	nitialisa	ation:		Defau	ılt value:					
			Sav	ed valu	ie:		Actua	l value (n	ot fo	r input)	): 🔲		
		Trans	mit on bus	(only fo	or output):		Read	from bus	(onl	y for in	put):		
Exception	Hand	lling											
Special Fe	ature	s											

## 2.3.4.11 Output SolarEnergyOnly

## **Standard mode**

DP Name:	S	olarEner	gyOnly		Abbr.:				Manda	tory		
FB Name:	D	HWC							Can be	interna	al 🗌	
Descriptio												
reports whe	ether	load by [	DHWC	is disabled of	due to suf	ficient sc	olar en	ergy; mair	nly used for	· visuali	sation	
<b>Datapoint</b>												
DPT_Name	e:	DPT_Boo	ol									
DPT Forma	_	B <sub>1</sub>						DPT_ID:				
Field		Descripti	on					Supp.	Range	Unit	Default	
											false	
Access Ty	pe											
♦ Output												
this $\rightarrow N$	Λ	$\boxtimes$	th	$nis \rightarrow 1$								
Spontar	Spontaneous $\square$ COV: $\square$ $\triangle$ -Value: Min repetition period: 10s											
	Cyclic Period: 15 Min											
Reques	t											
Communic	atio	n Type										
♦ Group	Obje	ct Datapo	oint						Mandatory	/:   \[\]		
Default	Grou	p Addres	s:	-								
<b>Dynamics</b>												
Power d		: Save:										
Power u	ıp:	Value	:	No initialisa	tion:			ılt value:				
	Saved value: Actual value (not for input):											
			mit on	bus (only for	r output):		Read	from bus	(only for in	put):		
<b>Exception</b>	Han	dling										
Special Fe	ature	es										

## 2.3.4.12 Output SolarEnergySupport

## **Standard mode**

DP N	lame:	Sola	rEner	gySup	port	Al	bbr.:				Mand	datory		
FB N	lame:	DHV	/C								Can	be intern	al	
Desc	cription													
repor	rts whethe	r DH	lW loa	ad is pa	artly done	by so	lar ene	rgy; ma	ainly use	ed for visu	ualisation			
	point Typ													
	_Name:	DP	T_Boo	ol										
	Format:	B <sub>1</sub>								DPT_ID:		2		
Field		De	scripti	on						Supp.	Range	Unit	Default	
													false	
Acce	ess Type													
<b>♦</b> (	Dutput													
th	$is \rightarrow M$			t	his $\rightarrow$ 1									
S	Spontaneous   COV:   Δ-Value:   Min repetition period:   10s													
	Cyclic Period: 15 Min													
R	equest													
Com	municati	on T	уре											
<b>♦</b> (	Group Obj	ect [	)atapo	oint							Mandato	ory: 🛛 🖂		
D	efault Gro	up A	ddres	s: -	-									
Dyna	amics													
-	ower dow	n:	Save:											
P	ower up:		Value	:	No initial		า: 🗀			ılt value:				
	Saved value: Actual value (not for input):													
				mit on	bus (only	for ou	utput):		Read	from bus	(only for	input):		
Exce	eption Ha	ndlir	ng											
Spec	cial Featu	res												

## 2.3.4.13 Output TempOptimShiftActive

## **Standard mode**

DF	Name:	Tem	pOptir	mShift/	Active		Abbr.:				Manda	itory	
FB	Name:	DHW	/C								Can be	e interna	al
De	scription												
	orts whether		ual Di	HW ter	mp set	ooint i	is influenc	ed by Te	empDH	lWSetpO <sub>l</sub>	otimShift ≠	0; mair	ıly used
_	visualisatio												
	tapoint Ty												
	PT_Name:	_	T_Boo	ol									
	PT Format:	B <sub>1</sub>								DPT_ID:			
Fie	eld	Des	scripti	on						Supp.	Range	Unit	Default
													false
Ac	cess Type												
<b>♦</b>	♦ Output												
this $\rightarrow$ M $\square$ this $\rightarrow$ 1 $\square$													
	Spontaneous												
	Cyclic Period: 15 Min												
	Request		$\boxtimes$										
Co	mmunicati	on T	уре										
<b>♦</b>	Group Ob	ject D	atapo	oint							Mandator	y:   🛛	
	Default Gro	oup A	ddres	s:	_								
Dy	namics												
	Power dow	'n:	Save:										
	Power up:		Value	:	No init	tialisa	tion:		Defau	ılt value:			
					Saved	l value	e:	]	Actua	l value (n	ot for input	): 🔲	
	Transmit on bus (only for output): Read from bus (only for input):												
Ex	ception Ha	ndlir	ng										
Sp	pecial Features												

## 2.3.4.14 Output TempDHWSensorHigh

## **Standard mode**

DP Name:	Ten	npDHV	<b>VSenso</b>	orHigh		Abbr.:		-				Ma	ndat	tory		
FB Name:	DH\	NC										Cai	n be	intern	al	
Description																
Current value	of th	ne DHV	V temp	erature s	ensc	or with h	iigh	ner pos	itio	n/te	emperatui	re (DHV	V sta	art tem	perature e	)
Datapoint Ty	/pe															
DPT_Name:			lue_Te	emp												
DPT Format:											DPT_ID:			•	•	
Field	De	escripti	on								Supp.	Range		Unit	Default	
												full ran	ige	°C	CS	
Access Type	•															
◆ Output		_			1 -	_										
this $\rightarrow$ M				his $\rightarrow 1$												
Spontaneous																
Cyclic Period: 15 Min																
Request																
Communica																
♦ Group Ol												Manda	atory	r:   🛛		
Default Gr	roup /	Addres	ss: -	-												
Dynamics																
Power dov		Save:		Ш						_						
Power up:		Value	<b>:</b> :	No initia			<u> </u>		_		ılt value:					
				Saved v							I value (n					
			mit on	bus (only	y for	output):			Re	ead	from bus	(only fo	or in	out):		
Exception H	<u>andli</u>	ing														
Special Feat	ures															

#### LTE-HEE mode:

FB:	DHWC	LTE	Serv	rer Output Name: TempDHWSensorHigh Mandatory ☐ Optional ⊠									
	iption:	-											
Currer	nt value of	the DI	HW 1	temperature sensor	with higher	positio	n/tempera	ature	(DHW st	art temp	erature)		
DPT:	Name	DPT_	Tem	pHVACAbs_Z	DPT ID	205.10	0 Data	type	format \	/ <sub>16</sub> Z <sub>8</sub>			
Field			Des	cription		Sup.	Range		Unit	COV	Default		
Temp			DHV	V temperature value	)	M	full		°C	2	cs		
Status			stan	dard Status attribute	es								
- Fault				sor failure true / false	-	M	true/fals	-	bool	Υ	false		
- InAla		;	sens	sor value alarm true	/false	0	true/fals		bool	Υ	false		
- Alarn	nUnAck		alarr	n acknowledgemen	t status	0	ack/una	ck	bool	Υ	unack		
				/ unack									
	her flags			supported									
Command standard Commands, Write only													
- Alarn				n acknowledge		0							
- all ot			not s	supported		NA							
comm													
Comm	ommunication:												
	ing Group	<b>)</b> :											
Class	S			Type				)efau	lt				
	ographical												
App	olication S	pecific	$\boxtimes$	DHWZone			1						
	assigned			Broadcast	Configura	ıble 🗌							
	Address:			IO Type(ID):	177 (DHW		Proper			3			
	Services			COV 🛛 I	MinRepTime	e:	10 sec	С	Heartl	peat:	15 min		
	Report	_	$\boxtimes$	Output per default	communicat	ing	Rinding	r Gro	up Wildc	ard allow			
	E Read-R								<u> </u>	aiu ailov	veu 🗀		
•	ling of the		t	Tx Prio:	High 🗌		Norn	nal 🗵		Low			
	all always b	oe -		Transm after Powe	run: Stored	Value	□ ∆ct	: Valu	ıe 🕅 Dı	efault Va	عبراه		
	ported)			Transmatter rowe	Tup. Otorcu	value		. vaiu		Jiadit Ve			
	erty-Serv vidual acc			Read only		Read/V	Vrite	$\boxtimes$	1)				
_	tion Hand								Save a	t Power	down		
		<u>y</u> .							Jourou				
Specia	al Feature	s:											
			nal;	for AlarmAck function	on only								

## 2.3.4.15 Output TempDHWSensorLow

## **Standard mode**

DP Name:	Те	mpDHWSens	sorLow	Abbr.:				Mandat	tory				
FB Name:	DH	HWC						Can be	interna	al 🗌			
Description													
Current valu	e of	the DHW tem	perature sens	or with lo	wer posi	ition/te	mperature	e (DHW sto	p temp	erature)			
<b>Datapoint T</b>													
DPT_Name:		)PT_Value_T	emp										
DPT Format		16					DPT_ID:		•				
Field		Description					Supp.	Range	Unit	Default			
								full range	°C	CS			
Access Typ	е												
◆ Output													
this $\rightarrow$ M			this $\rightarrow 1$										
Spontane	Spontaneous												
	Cyclic Period: 15 Min												
Request		$\boxtimes$											
Communica									1				
		t Datapoint						Mandatory	<i>'</i> :  ⊠				
	roup	Address:											
Dynamics		_											
Power do		Save:				T							
Power up	):	Value:	No initialisat				ılt value:						
			Saved value					ot for input)					
			n bus (only for	output):		Read	from bus	(only for in	out):				
<b>Exception F</b>	land	ling											
Special Fea	ture	S											

#### LTE-HEE mode:

FB:	DHWC	LTE	Serv	ver Output Name: TempDHWSensorLow  Mandatory □ Optional ▷									
Desci	ription:	-			-					-			
Curre	nt value of	the D	HW	temperature sensor	with lower p	osition	/tempe	erature	(DHW sto	op tempe	erature)		
DPT:	Name	DPT	Tem	pHVACAbs_Z	DPT ID	205.10	0 Da	atatype	format	$V_{16}Z_{8}$			
Field				cription		Sup.	Range	е	Unit	COV	Default		
Temp			DHV	V temperature value	9	М	full		°C	2	cs		
Status				dard Status attribute									
- Faul	-			sor failure true / fals	-	M	true/fa		bool	Υ	false		
- InAla				sor value alarm true		0	true/fa	alse	bool	Υ	false		
- Aları	mUnAck			n acknowledgemen	it status	0	ack/u	nack	bool	Υ	unack		
				/ unack									
- all other flags not supported													
Comn				dard Commands, W	/rite only								
- Aları	-			m acknowledge		0							
- all of			not s	supported		NA							
comm													
	nunicatior												
	ding Grou	p:											
Clas				Туре				Defau	ılt				
	eographica												
Ap	plication S	pecific		DHWZone				1					
	assigned			Broadcast	Configura								
	Address:			IO Type(ID):	177 (DHW			erty ID		54			
LTE	-Services	(even	it):		MinRepTime		10 s	sec	Heart	beat:	15 min		
	oReport		$\boxtimes$	Output per default	communicat	ing	Rind	ina Gra	oup Wildo	ard allow	wod $\square$		
	ΓΕ Read-R									aru alluv	veu 🗀		
	lling of the		ıt	Tx Prio:	High 🗌		No	ormal 🛭		Low			
	all always l	be		Transm after Power	run: Stored	Value		Act Valu	ם 🏻 ח	efault Va	ا میلد		
	pported)			Transmarter rowe	siup. Storeu	value		ici vaii		Clault V			
	perty-Serv ividual ac			Read only		Read/V	Vrite	$\boxtimes$	1)				
•	otion Hand								Save a	t Power	down		
	<b>.</b>	····J·							100.00	01101			
Sneci	al Feature												
			nal·	for AlarmAck function	on only								

## 2.3.4.16 Output TempFlowWaterDHW

## **Standard mode**

DP Name:	Ter	npFlowWate	erDHW	Abbr.:				Ma	andat	ory			
FB Name:	DH	WC						Ca	an be	intern	al		
Description													
Current wate	r flow	/ temperatur	re for DHW lo	ad									
<b>Datapoint Ty</b>	/ре												
DPT_Name:		PT_Value_1	Гетр										
DPT Format:	F₁	16					DPT_ID:	: 9.0	001				
Field	D	escription					Supp.	Rang	е	Unit	Defau	ılt	
								full ra	nge	°C	CS	3	
Access Type	•												
♦ Output													
this $\rightarrow M$		$\leq$	this $\rightarrow$ 1										
Spontane	Spontaneous   COV:   Δ-Value:   2 K   Min repetition period:   10s												
	Cyclic Period: 15 Min												
Request		$\square$											
Communica	tion	Туре											
♦ Group Ol	bject	Datapoint						Mand	latory	$:   \boxtimes$			
Default G	roup	Address:											
Dynamics													
Power do	wn:	Save:											
Power up:		Value:	No initialisa	ation:	]	Defau	ılt value:						
			Saved valu	_	<u>l</u>	Actua	I value (n	ot for i	nput):	: 🛛			
			on bus (only fo	or output):		Read	from bus	(only f	for inp	out):			
<b>Exception H</b>	andl	ing											
Special Feat	ures												

#### LTE-HEE mode:

FB:	DHWC	LTE	Serv	ver Output Name: TempFlowWaterDHW  Mandatory □ Optional ⊠								
	ription:	-								-		
Curre	nt water flo	w ten	npera	ature for DHW load								
DPT:	Name	DPT	Tem	pHVACAbs_Z	DPT ID	205.10	0 Dat	atype	format \	$V_{16}Z_{8}$		
Field				cription		Sup.	Range		Unit	COV	Default	
Temp			DHV	V temperature value	)	М	full		°C	2	cs	
Status			stan	dard Status attribute	es							
- Faul				sor failure true / false	-	M	true/fal		bool	Υ	false	
- InAla				sor value alarm true		0	true/fal		bool	Υ	false	
- Aları	mUnAck			m acknowledgemen	t status	0	ack/una	ack	bool	Υ	unack	
				/ unack								
- all other flags not supported												
Command standard Commands, Write only												
- Aları				m acknowledge		0						
- all of			not s	supported		NA						
comm												
	ommunication:											
	ding Grou	p:										
Clas				Туре				Defau	ılt			
	ographica		<u></u>									
	plication S	pecific		DHWZone		<u></u> -		1				
	assigned			Broadcast	Configura							
	Address:			IO Type(ID):	177 (DHW		Prope			57		
	-Services				MinRepTime		10 se	ec .	Heartl	beat:	15 min	
	oReport	_	$\boxtimes$	Output per default	communicat	ing	Bindin	a Gro	oup Wildc	ard allov	ved $\square$	
	ΓΕ Read-R								•			
•	lling of the		it	Tx Prio:	High		Nor	mal 🛭		Low		
	all always I	be		Transm after Powe	rup: Stored	Value	ПА	t Valu	ue 🖂 D	efault Va	alue 🗍	
	pported)				- <b>-</b>		_					
	oerty-Serv ividual ac		•	Read only		Read/V	Vrite		1)			
Excep	otion Hand	dling:							Save a	t Power	down	
	al Feature	es:										
1) writ	e access is	s optic	nal;	for AlarmAck function	on only							

## 2.3.4.17 Input StatusHPM

FB:	DHWC	LTE Clie	nt Input Name:	StatusHPM			datory 🗌 tional 🖂		
Descr	iption:								
		ins variou	s status information	on of the hea	t product	ion. StatusH	IPM may	also used	for local
			DHWC (company						
DPT:	Name	DPT_Stat	usHPM	DPT ID	209.100	Datatype	e format	V <sub>16</sub> B <sub>8</sub>	
Field			Description				Sup.	Unit	Default
Temp	FlowProdS	egmH	common flow ten segment	nperature of	neat prod	duction	М	°C	CS
Attribu	ıtes								
	pFlowValid		validity of TempF				M	bool	false
- Faul	t		some failure in th				M	bool	false
			for monitoring); n the DHWC	nanufacturer	specific r	reaction in			
- Sum	merMode		boiler / boiler seq				0	bool	false
			summer/winter m						
- OffP	erm		boilers are perma	anently off (m	ianual sw	vitch or	0	bool	false
			failure)						
- NoH	eatAvailab	е	boiler / boiler seq heat	juence is tem	porary n	ot producing	0	bool	false
Comn	nunication	1:	-				<u>-</u>		
	ding Group	):							
Clas	-		Type			Default			
	ographical								
	plication S	oecific⊠	DistrSegmH		<u></u>	1			
	assigned		Broadcast 🗌	Configura					
	Address:		IO Type(ID):	136 (HPM		Property ID	):	51	
	-Service (e		InfoReport Sniffe	er on Binding			<b></b>		
InfoReport 🛛 Timeout: 31 Min									
Read – Response Read Wildcard / Resp Sniffer on Binding Group:									
Value	after Pow	erup:	Defaul	t Value 🛚			5	Stored Va	lue 🗌
Excep	otion Hand	lling:					Save at P	owerdow	n 🗌
Speci	al Feature	s:							
	<del>-</del>								

## 2.3.4.18 Input LockSignHPM

FB: DHWC LTE Clie	ent Input Name:	LockSignH			ndatory 🗌 Optional 🖂						
Description:											
see chapter 2.3.1.8 and do	ocument [09]										
<b>DPT:</b> Name DPT_Loc		DPT ID	207.101	Dataty	oe format	U <sub>8</sub> B <sub>8</sub>					
Field	Description				Sup.	Unit	Default				
PwrReduction	Requested powe		n reducti	on	M	%	cs				
	- 0 % no reduc										
	<ul> <li>– 100% max. red</li> </ul>					 					
Attributes	Bitset containing			, , , , , , , , , , , , , , , , , , , ,		l					
<ul><li>LockRequest</li></ul>	indicates if power of PwrReduction)		necessa	ry (validity	M	bool	false				
– Type	M	bool	uncritical								
	meaningful if Loc	kRequest=tru	ıe								
Communication:											
Binding Group:											
Class	Туре			Default							
Geographical 🔲											
Application Specific⊠	DistrSegmH			1							
Unassigned	Broadcast	Configurat									
DP Address:	IO Type(ID):	136 (HPM		Property I	D:	54					
LTE-Service (event <u>):</u>	InfoReport Sniffe	er on Binding									
InfoReport 🖂	Timeout: 1)		7	Min							
LTE-Service (polling): Read – Response ☐	Read Wildcard /	Resp Sniffer	on Bindir	ng Group:							
Value after Powerup:	Defaul	t Value 🛚			,	Stored V	′alue 🗌				
Exception Handling:					Save at F	Powerdo	wn 🗌				
					•						
Special Features:											
1) The signal is received or	The signal is received on event and periodically (if no COV occurred) as long as the LockRequest										
attribute is true. When the	overload condition	n in the HPM	disappea	ars, the Loc	kRequest	attribute	e changes				
to false and the signal will											
messages). Afterwards re-		opped until a	new ove	rload condi	tion appea	ars (this	procedure				
reduces unnecessary bus-	-load)										

## 2.3.4.19 Input ForceSignHPM

FB:	DHWC	LTE CI	ient Input Name:	ForceSignH	PM				datory 🔲 otional 🖂
Desc	ription:							Op.	nionai 🖂
		1 9 and	document [09]						
DPT:			orceSign	DPT ID	21.100	Datatype	e format	B <sub>8</sub>	
Field	Traine		escription	15. 1.15		Datatype	Sup.	Unit	Default
Attrib	utes		tset containing state	us info				J	
	eRequest		dicates overheat co		HPM (va	lidity of	М	bool	false
			maining attributes)						
- Prot	ection	ine	dicates that overhea	at is critical, to	o high bo	oiler temp	M	bool	false
- Ove	rsupply	ind	dicates that overhea	at is uncritical	but supp	ly temp is	M	bool	false
			uch higher than req						
- Ove	rrun		dicates that remaini		M	bool	false		
			oiler(s) after load sh						
- DHV	- DHWNorm Load DHW to 'Normal' Level in case of overheat						M	bool	false
DUN	('Protection' or 'Oversupply')								6-1
- DHV	- DHWLegio Load DHW to 'LegioProtect' Level in case of overheat						M	bool	false
Doo	mHComf 2)		Protection' or 'Overs and Room Heating t		val in aa	oo of	NIA	hool	foloo
- R00	IIIIICOIIII		rerheat ('Protection'				NA	bool	false
- Roo	mHMax 2)		pad Room Heating v				NA	bool	false
- 1100	IIII IIVIAA		ise of overheat ('Pro				INA	DOOI	laise
			not supported		Cioappi	<b>y</b> /			
Comr	nunication		<u>''</u>				<u>!</u>	<u>!</u>	<u>-</u>
Bine	ding Group	p:							
Clas	SS		Туре			Default			
Ge	eographical								
Ap	plication S	pecific $oxtime $				1			
Ur	nassigned		Broadcast	Configuration	le 🗌				
	Address:		IO Type(ID):	136 (HPM		Property ID	):	53	
	-Service (		InfoReport Sniff	er on Binding					
	oReport	$\boxtimes$	Timeout: 1)		7	Min			
	-Service (		Read Wildcard /	Resp Sniffer	n Bindin	na Group.			
	ead – Resp					.g 0.0ap.			
	after Pow		Defau	ılt Value 🛚		<u></u>		Stored Va	
Exce	ption Hand	lling:				;	Save at I	Powerdow	/n
Spec	Special Features:  The signal is received on event and periodically (if no COV occurred) as long as the ForceRequest								
1" The	signal is re	eceived	on event and period	dically (if no C	OV occu	rred) as long	g as the	ForceReq	uest
			e forcing condition						
			III be repeated by th						
			e-transmission is st	topped until a	new forc	ing condition	n appear	s (tnis pro	ceaure
	es unneces			a whathar DU\	M or Boo	m Heating	should be	a activator	d in case
<sup>2)</sup> HPM with higher functionality may indicate whether DHW or Room Heating should be activated in of overheat. The flags for Room Heating are not considered in the DHWC							J 111 CASE		
101000	micut. The	nago 10	i i toomi i loating ale		Ju 111 1110				

## 2.3.4.20 Input LockSignHFDM

FB:	DHWC	LTE Clie	nt Input Name:	Input Name: LockSignHFDM							
Desci	ription:										
see ch	napter 2.3.	1.10 and c	locument [09]								
DPT:	Name	DPT_Loc		DPT ID	207.101	1 [	Datatyp	e format	$U_8B_8$		
Field			Description					Sup.	Unit	Default	
PwrR	eduction		Requested power - 0 % no reduct - 100% max. red	tion	n reducti	ion		M	%	cs	
Attribu	utes		Bitset containing	status info							
– Locl	kRequest		indicates if power of PwrReduction)		necessa	ıry (v	alidity	M	bool	false	
– Тур	е		type of overload; LockRequest=tru		meaning	gful if	f	M <sup>2)</sup>	bool	uncritical	
Comr	nunication	1:	•					-		<del>.</del>	
Binding Group:											
Clas	S		Туре			Defa	ault				
Ge	ographical										
Ap	plication S <sub>l</sub>	pecific⊠	DistrSegmH (primary) 1								
Un	assigned		Broadcast Configurable								
DP /	Address:		IO Type(ID):	144 (HFD		Pro	perty II	D:	52		
	-Service (e		InfoReport Sniffe	er on Bindin							
	oReport	$\square$	Timeout: 1)		7	Min					
	-Service (pead – Respo		Read Wildcard / I	Resp Sniffer	on Bindir	ng G	roup:				
Value	after Pow	erup:	Defaul	t Value 🛚			•	,	Stored V	/alue 🗌	
Excep	otion Hand	lling:						Save at F	Powerdo	wn	
	al Feature										
			event and period								
HFDN	attribute is true. If LockRequest attribute changes to false, the signal is still repeated by the preceding HFDM with the heartbeat-period during 9 minutes (3 messages). Afterwards re-transmission is stopped										
			on appears (this prually the type func						ment no	useful	
applic	ations for 'o	critical' Lo	ckSignHFDM are	known. But i							
LOCKS	ockSignHFDM and the DHWC shall react accordingly										

Hot Water Heating

## 2.3.4.21 Input ForceSignHFDM

FB: DHWC LTE Client Input Name: ForceSignHFDM								Man	datory 🗌
			•					O	ptional 🖂
Desc	ription:								
see c	hapter 2.3.	1.11 aı	nd document [09]						
DPT:	Name	DPT_	ForceSign	DPT ID	21.101	Datatype	e format	B <sub>8</sub>	
Field		I	Description				Sup.	Unit	Default
Attrib									
- For	ceRequest		indicates if forced po		tion is ne	cessary	M	bool	false
		(	(validity of the remai	ning attrib)					
	tection	Į į	indicates that overhe	eat is critical e	.g. in heat	t exchanger	M	bool	false
- Ove	ersupply		indicates that overhe				M	bool	false
			much higher than re						
- Ove	errun		indicates that remain		avallable	in the neat-	M	bool	false
	exchanger after load shutdown  DHWNorm Load DHW to 'Normal' Level in case of overheat							bool	false
יחט -	('Protection' or 'Oversupply')							bool	laise
- DH/	- DHWLegio   ('Protection' or 'Oversupply') - DHWLegio   Load DHW to 'LegioProtect' Level in case of overheat							bool	false
	vvLcgio		('Protection' or 'Ove		iii casc o	Overneat	M	DOOI	laise
- Roc	mHComf 2)		Load Room Heating		evel in ca	ise of	NA	bool	false
			overheat ('Protection				''		10.00
- Roo	mHMax <sup>2)</sup>		Load Room Heating				NA	bool	false
			case of overheat ('P	rotection' or 'C	Oversupply	ý')			
		:	=>not supported						
Com	munication	า:							
Bin	ding Grou	p:							
Cla			Туре			Default			
	eographical	<del>.</del>	<u> </u>						
	pplication S	pecific			<u></u>	1			
	nassigned		Broadcast	Configura					
	Address:		IO Type(ID):	144 (HFC		Property ID	):	53	
	E-Service (			ffer on Bindin					
	foReport				7	Min			
	E-Service (		Read Wildcard	/ Resp Sniffer	on Bindir	ng Group:			
	ead – Resp			<u> </u>				04	-1
	e after Pow		Deta	ult Value 🛚				Stored Va	
Exce	ption Hand	dling:				Į;	Save at I	Powerdov	vn
	ial Faatuus								
	ial Feature		d on event and perio	odioally (if pa (	201/ 222:	rrod) oo loo	n oo the	ForosDas	vuoot
			d on event and period the forcing conditior						
			will be repeated by t						
			re-transmission is						
111622	ayes). Alle	iwaius	5 1C-((a) (5) ((((5)) ()) (5)	stopped until a	I HEW IOIC	ing condition	i appeai	s (uns pro	Jeduie

reduces unnecessary bus-load)
<sup>2)</sup> HFDM with higher functionality may indicate whether DHW or Room Heating should be activated in

case of overheat. The flags for Room Heating are not considered in the DHWC

## 2.3.4.22 Input TempFlowWater

## **Standard mode**

DP Name:	Ten	npFlowWate	r	4	Abbr.:				M	andat	tory	
FB Name:	DΗ\	NC		-					Ca	an be	intern	al 🛛
Description												
see LTE-HEE	mod	de										
<b>Datapoint Ty</b>	/ре											
DPT_Name:	DF	PT_Value_T	emp									
<b>DPT Format:</b>	F <sub>1</sub>	6					DP	T_ID:	: 9.	001		
Field	De	escription					Su	pp.	Rang	je	Unit	Default
									full ra	nge	°C	CS
<b>Access Type</b>	)											
♦ Input												
$N \rightarrow this$			$1 \rightarrow thi$	is	$\leq$							
Spontaneo	ous			Cyclica	lly:			Time	e-out:		31 mi	n
Request				Polling:				Perio	od:			
Communicat	tion <sup>-</sup>	Гуре										
♦ Group Ob	oject	Datapoint							Mano	latory	/:	
Default Gr	oup A	Address:									-	
Dynamics												
Power dov	vn:	Save:										
Power up:		Value:	No in	itialisatio	on:	Defa	ault v	alue:			$\boxtimes$	
			Save	d value:		Actu	al va	llue (n	not for i	nput)		
		Transmit o	n bus (d	only for	output)	Read	d fror	m bus	(only	for in	out):	
<b>Exception H</b>	andli	ng										
<b>Special Feat</b>	ures											

#### LTE-HEE mode:

FB:	DHWC	LTE Clie	nt Input Name:			latory 🗌 tional 🏻				
Descr	iption:								<u> </u>	tional 🔼
		nal from a	flow temperature	sensor conta	ains the co	ommor	n wate	er flow te	mperature	of the
			. Usage in the DH							
DPT:			npHVACAbs Z	DPT ID	205.100			format	V <sub>16</sub> Z <sub>8</sub>	
Field	'	_	Description			•		Sup.	Unit	Default
Templ	FlowWater		temperature value	е				M	°C	cs
Status	3		standard Status a	attributes				M	bitset	
- OutC	OfService		void sensor value	true / false				M	bool	false
- Fault	t		sensor failure true	e / false				M	bool	false
- Over	ridden		sensor value ove					0	bool	false
- InAla	arm		sensor value alar	m true /false				0	bool	false
- AlarmUnAck alarm acknowledgement status ack / unack O							bool	unack		
								bool		
Comn	nunication	<b>)</b> :	-					_	_	-
	ding Group	<b>)</b> :								
Clas	S		Туре			Defaul	lt			
Ge	ographical									
Ар	plication S	pecific⊠	DistrSegmH			1				
Un	assigned		Broadcast	Configura	ble 🗌					•
DP A	Address:		IO Type(ID):	324 (FWT	S)	Prope	erty ID	:	51	
LTE	-Service (e	event):	InfoReport Sniffe	er on Binding	g Group:		-	-		
Info	oReport	$\boxtimes$	Timeout:		31	Min				
	- <b>Service (բ</b> ad – Resp		Read Wildcard / F	Resp Sniffer	on Bindin	ng Grou	nb: -	-		
Value	after Pow	erup:	Default	t Value 🖂			-	;	Stored Va	lue 🗌
Excep	Exception Handling: Save at Powerdown									
The D	HWC will u	ise a com	pany specific defa	ult value afte	er power-u	up or ir	case	of comr	nunicatior	failure,
if no s	ensor data	is receive	ed.							
Speci	al Feature	s:								
	This input can be internal									

## 2.3.4.23 Input DHWModeEff

FB: DHWC	LTE CI	ientInput Name:									
								Op:	tional 🗌		
Description:											
		VSM contains the cu						ie DHW Zo	one		
		C to determine the a									
	DPT_DH\	NMode_Z	DPT ID	201.102	Dat	atype	format	$N_8Z_8$			
Field		Description					Sup.	Unit	Default		
DHWMode		Actual DHW Mode	, range [1	<b>4]</b> <sup>2)</sup>		<b>.</b>	M	enum.	cs		
Status		standard Status att	tributes								
- Overridden		DHW mode overric	dden true /	false			0	bool	false		
- all other flags		not supported					NA				
Communication	:										
Binding Group	):										
Class											
Geographical											
Application Sp	oecific⊠	DHWZone				1					
Unassigned		Broadcast	Configu	rable 🗌							
DP Address:		IO Type(ID):	176 (DHV		Prope	rty ID	:	51			
LTE-Service (e	event):	InfoReport Sniffer	on Bindin	g Group:		-	-				
InfoReport	$\boxtimes$	Timeout:		31	Min						
LTE-Service (p		Read Wildcard / Re	esn Sniffer	on Rindin	a Grou	ın· -	_				
Read – Respo			•	on bindin	9 0100	۱p.					
Value after Pow	er-up:	Default \	Value ⊠				,	Stored Val	ue 🗌		
<b>Exception Hand</b>	ling:					S	Save at F	Powerdow	n 🗌		
Special Feature											
If the signal DHWModeOptim is received from an external Optimizer, the DHWC will ignore the signal											
		WSM and use the c									
		{ DHWModeEff + T		SetpSetEff	f [4] (+	DHW	ModeEf	fNext)} o	r <b>{</b>		
TempDHWSetp	Eff }. This	s input can be devic	e-internal								
²) value 0='Auto'	value 0='Auto' is not allowed => to be ignored by the DHWC => use default value										

## 2.3.4.24 Input TempDHWSetpSetEff [4]

FB:	DHWC	LTE Clie	ntInput Name:	Input Name: TempDHWSetpSetEff [4] Mandatory 🔯 7 Optional						
Descri	iption:									
		contains t	he calculated set	(4 values) of	DHW tem	perature	setpoints f	or 'LegioF	rotect',	
			off/FrostProtect' fro							
is used	in the DH	IWC in ord	der to determine th	ne actual DH	W tempera	ature setp	oint.	•		
DPT:	Name	DPT Ten	npDHWSetpSet[4]	DPT ID	213.101	Dataty	pe format	$V_{16}V_{16}V_{1}$	<sub>6</sub> V <sub>16</sub>	
Field	•		Description	·			Sup.	Unit	Default 2)	
TempS	SetpLegioF	Protect	DHW temperature operating mode	e setpoint for	LegioProt	tect	М	°C	cs	
TempS	SetpNorma	ıl	DHW temperature	e setpoint for	Normal o	perating	M	°C	CS	
TempS	SetpReduc	ed	DHW temperature	e setpoint for	Reduced	operating	g M	°C	cs	
TempS	SetpOff/Fro	stProtec	DHW temperature operating mode	e setpoint for	Off/FrostF	Protect	M	°C	CS	
Comm	unication	:					<u> </u>		•	
	ing Group									
Class			Туре			Det	fault			
Geo	ographical									
App	olication S	oecific⊠	DHWZone			]1				
Una	assigned		Broadcast	Configur	able 🗌					
	ddress:		IO Type(ID):	176 (DHV	/SM)	Property	ID:	53		
LTE-	Service (e	event):	InfoReport Sniffe	er on Binding						
	Report	$\boxtimes$	Timeout:		31 N	/lin				
	Service (pad – Respo		Read Wildcard / F	Resp Sniffer	on Binding	Group:				
Value	after Pow	er-up:	Default	t Value 🛚			-	Stored Va	lue 🗌	
Excep	tion Hand	ling:					Save at Po	owerdown		
						•				
Specia	al Feature	s:								
1) Eithe	er impleme	ntation of	{ DHWModeEff +	TempDHWS	etpSetEff	[4] (+ DH	WModeEf	fNext) } o	r {	
			s input can be devi							
<sup>2)</sup> recor	mmended	default va	llues: 65°, 55°, 40°	°, 5°						

## 2.3.4.25 Input DHWModeEffNext

Standard Mode: NA LTE-HEE Mode:

FB: DHWC LTE C	lientInput Name:	entInput Name: DHWModeEffNext								
Description:							Optio	onal 🛚 1)		
This optional input signal	from DHWSM conta	ins next DH	W operat	ting mo	ode ar	nd the tin	ne until the	e next		
mode			•	Ū						
This signal is e.g. used by	the DHWC to calcu	late the opt	imised sta	art/stop	o time	for DHV	V load			
<b>DPT</b> : Name DPT_DH	WModeEffNext	DPT ID	206.102	Dat	tatype	format	$U_{16}N_8$			
Field	Description					Sup.	Unit	Default		
DelayTime	Time to next DHW					M	min	0		
	0 = no next DHWN		ble <sup>2)</sup>							
DHWMode	Next DHWMode, r		2)			M	enum.	cs		
	and [0] = next DH\	WMode Und	lefined 2)							
Communication:								-		
Binding Group:										
Class Type Default										
Geographical 🔲										
Application Specific⊠	DHWZone				1					
Unassigned	Broadcast	Configur	able 🗌							
DP Address:	IO Type(ID):	176 (DHV		Prope	erty IC	):	52			
LTE-Service (event):	InfoReport Sniffer	on Binding	g Group:		-					
InfoReport 🖂	Timeout:		31	Min						
LTE-Service (polling): Read – Response	Read Wildcard / R	esp Sniffer	on Bindin	ıg Grou	ıp: -					
Value after Power-up:	Default	Value 🛚			-	(	Stored Val	lue 🗌		
<b>Exception Handling:</b>										
1										
Special Features:	Special Features:									
1) Either implementation o	f { DHWModeEff + T	empDHWS	etpSetEf	f [4] (+	DHW	/ModeEff	fNext) } o	r {		
TempDHWSetpEff }. Th			•				, -	-		
<sup>2)</sup> encoding of special con	ditions, see table be	low								

## Interpretation of Time and DHWMode fields

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

## 2.3.4.26 Input TempDHWSetpEff

## **Standard mode**

DP Name:	TempDHWSetpE	Eff	Abbr.:					Manda	tory	
FB Name:	DHWC							Can be	interna	al 🛛
Description										
see LTE-HEE										
Datapoint Ty										
DPT_Name:	DPT_Value_Te	emp								
DPT Format:	F <sub>16</sub>					DPT_		9.001		•
Field	Description					Supp		ange	Unit	Default
							fu	ll range	°C	CS
Access Type										
♦ Input										
$N \rightarrow this$			$\boxtimes$							
Spontaneo	ous 🛛	Cyclica					me-ou	t:	31 mii	n
Request		Polling	<b> </b> :			Pe	eriod:			
Communicat	ion Type									
	ject Datapoint						M	andatory	/:	
Default Gr	oup Address:  -	_								
Dynamics										
Power dov	vn: Save:									
Power up:	Value:	No initialisat				ılt valu				
		Saved value	_	<u> </u>				or input		
		bus (only for	output):		Read	from b	ous (or	nly for in	put):	
Exception Ha	andling									
Special Feat	ures									

#### LTE-HEE mode:

FB: DHWC	LTE Clie	ent Input Name:			itory 🔯 1) otional 🔲				
Description:	<del></del>								
		ne DHWSM and de V controller. This in							
<b>DPT</b> : Name	DPT_Ten	npHVACAbs_Z	DPT ID	205.100	Da	tatype	format	$V_{16}Z_{8}$	
Field		Description					Sup.	Unit	Default
Temperature		DHW temperature	e setpoint va	lue			М	°C	cs
Status		standard Status a	attributes				М	bitset	
- OutOfService void setpoint value								bool	false
- Overridden setpoint value overridden true / false								bool	false
- all other flags not supported								bool	
Communicati	on:							<u>-</u>	_
Binding Gro	up:								
Class		Туре			Defau	lt			
Geographic	al 🔲								
Application	Specific⊠	DHWZone (Link \	with Controlle	er)		1			
Unassigned	d 🗌 ti	Broadcast	Configur	able 🗌					
DP Address		IO Type(ID):	176 (DHV		Prop	erty ID	:	55	
LTE-Service		InfoReport Sniffe	er on Binding			_	-		
InfoReport	$\boxtimes$	Timeout:		31	Min				
LTE-Service Read – Res		Read Wildcard / F	Resp Sniffer	on Bindin	ig Gro	up: -	-		
Value after Po	werup:	Default	t Value 🛚					Stored Va	ilue 🗌
<b>Exception Ha</b>	Exception Handling: Save at Powerdown								
In case of miss behaviour	In case of missing input data (timeout) or value 'OutOfService' the DHWC will have a company specific behaviour								
Special Featu	res:					-			
		{ DHWModeEff +		SetpSetEf	f [4] (+	DHW	ModeEt	ffNext)} c	r {
TempDHWSet	empDHWSetpEff }. This input can be device-internal								

## 2.3.4.27 Input DHWModeOptim

FB:	DHWC	LTE CI	ientInput Name:			latory 🗌 tional 🖂				
Descr	iption:	•								
			by an external HVA	C Optimise	er and de	fines	s the op	otimised D	HW opera	ating
	for the DH									
DPT:	Name	DPT_DH	WMode_Z	DPT ID	201.102	2 [	Datatyp	e format	$N_8Z_8$	
Field			Description			1\		Sup.	Unit	Default
DHWN			optimised DHW Mo		[14] or 0	) ')		M	enum.	0
Status			standard Status attr					M	bitset	
	fService		void value => no op	timized DI	HW Mode	e ava	ailable	M	bool	true
	her flags		not supported					NA	bool	
Communication:										
Binding Group:										
Class Type Default										
	ographica									
	olication S	pecific⊠	DHWZone				1			
	assigned			Broadcast Configurable C						
	Address:		IO Type(ID):	115 (HVA		Pro	perty I	D:	53	
	Service (		InfoReport Sniffer	on Binding						
	Report		Timeout:		31	Min				
	<b>Service (</b> ad – Resp		Read Wildcard / Re	sp Sniffer	on Bindir	ng G	roup:			
Value	after Pow	/er-up:	Default V	′alue 🛚				•	Stored Va	lue 🗌
Excep	tion Hand	dling:						Save at F	owerdow	n 🔲
Specia	al Feature	es:								
			Status 'OutOfService							
			ΓΑΝΤ: if this signal is							
			I ignore the signal D		ff from th	ne DI	HWSM	and use	the optimi	sed
DHW	/ Mode ins	stead if DF	IWModeOptim is ≠ 'A	Auto						

## ${\bf 2.3.4.28\; Input\; Temp DHW Setp Optim Shift}$

## **Standard Mode:**

DF	Name:	I em	ıpDHWSetp	Optims	Shift			Abbr.:				N	/landat	ory		
FB	Name:	DHV	VC									C	Can be	internal		
De	scription															
Th	is optional ir	nput	signal from	an ext	ernal	HVAC C	ptir	miser co	ntains	ас	orrecti	ion va	alue to	the act	ual DHW	!
ter	mperature se	etpoi	int.													
	tapoint Typ	ре														
DF	PT_Name:	DF	PT_Value_T	empd												
DF	PT Format:	F <sub>16</sub>	5							DP	T_ID:	9	.002			
Fie	eld	De	scription							S	upp.	Ra	inge	Unit	Default	Ī
												f	ull	K	0	
Ac	cess Type															
•	Input															
	$N \rightarrow this$			$1 \rightarrow th$	is	$\square$										
	Spontaneo	us			Cycl	ically:		$\boxtimes$			Time-	out:		31min		
	Request				Polli	ng:					Perio	d:				
Co	mmunicati	on T	уре													Ī
<b>♦</b>	Group Obj	ect [	Datapoint									Man	datory	: 🛛		
	Default Gro	up A	Address:													
Dy	namics															
	Power dow	n:	Save:													
	Power up:		Value:	No in	itialis	ation:			Defau	ılt va	alue:			$\boxtimes$		
				Save	d val	ue:										
									Read	fror	n bus:					
Ex	ception Ha	ndli	ng													
Sp	ecial Featu	res														
													-			

## Hot Water Heating

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

FB:	DHWC	LTE Clie	nt Input Name:		Mandatory ☐ Optional ⊠					
Desci	ription:	-		-					<u>-</u>	
This c	ptional inp	ut signal fr	om an external H	VAC Optimis	er contai	ns a co	orrectio	n value	to the act	ual DHW
tempe	erature setp	oint.								
DPT:	Name	DPT_Ten	npHVACRel_Z	DPT ID	205.101	1 Da	tatype	format	$V_{16}Z_{8}$	
Field			Description					Sup.	Unit	Default
Temp	erature		DHW temperature	e setpoint sh	ift value			M	K	0
Status standard Status attributes M						М	bitset			
- all flags not supported, can be ignored!						NA	bool			
Comr	nunication	1:							-	_
Bind	ding Group	<b>)</b> :								
Clas	ss		Туре				Defau	lt		
Ge	ographical									
Ap	plication S	pecific⊠	DHWZone			]	1			
Ur	assigned		Broadcast	Configur						
DP A	Address:		IO Type(ID):	115 (HVA	COPT)	Prope	erty ID:		54	
	-Service (e	event):	InfoReport Sniffe	er on Binding				-		
Inf	oReport	$\square$	Timeout:		31	Min				
	- <b>Service (բ</b> ead – Respe	<u></u>	Read Wildcard / F	Resp Sniffer	on Bindir	ng Gro	up:	-		
Value	after Pow	er-up:	Default	t Value 🛚			•	Ç	Stored Va	lue 🗌
Exce	otion Hand	lling:					S	ave at F	Powerdow	n 🗌
Speci	al Feature	s:								

# 2.3.4.29 Input TempDHW

## Standard mode

**KNX Standard** 

DΡ	Name:	TempDHV	W	Abbr.:				Manda	tory		Ш	
FB	Name:	DHWC						Can be	interna	al		
Des	scription											
		nal from a	remote DHW	temperature se	nsor (D	HWTS)	contain	s one actual	DHW			_
				DHW load contro		,						
				IW temperature		may he	linked t	o the DHWC	: But in	more		
				re values are ne							hΔ	
				he DHW storage		ille Di	IVVC III C	order to take	iiito act	Journ t	116	
uiiie				ure): sensor pla		nacitio	n in the	DUM stores	o topk	with the	_	
_											е	
				load starts if this								
_				re): sensor plac							!	
	lowest wa	ter temper	rature. DHW I	oad stops if this	temper	ature re	eacnes t	ne actual DF	ivv setp	oint.		
				ne DHWC, two ii						to the		
DH	WC. <u>In sta</u>	<u>ndard mod</u>	<u>de two separa</u>	te group objects	s have t	<u>o be im</u>	<u>plement</u>	<u>ed in the DH</u>	<u>WC</u> .			
				ues to the Temp	DHWS	ensorHi	igh and i	TempDHWS	ensorLo	WC		
data				in the DHWC.								
_	the senso	r providing	g the higher te	emperature value	e is ma <sub>l</sub>	oped to	the Ten	npDHWSens	orHigh	datapo	oint	
_	the senso	r providing	the lower ter	mperature value	is map	ped to t	he Tem	pDHWSenso	orLow d	atapoii	nt	
Dat	apoint Ty	ре										
	T Name:		alue_Temp									_
DP	T Format:	F <sub>16</sub>					DPT II	D: 9.001				_
Fiel		Descript	tion				Supp.	Range	Unit	Defau	ılt	Ī
								full range	°C	CS		-
Δcc	cess Type							ran range				
<u> </u>	Input											H
	$N \rightarrow this$		1 . th	is 🛛								_
			$1 \rightarrow th$				Time	4.	04			_
	Spontaneo	us 🗵		Cyclically:				e-out:	31 mir	1		_
	Request			Polling:			Per	iod:				_
Cor	mmunicati											
<b>♦</b>	Group Ob							Mandator	<i>/</i> :			
_	Default Gro	oup Addre	ess:									
Dyr	namics											
ا	Power dow	n: Save	e: 🔲									_
_	Power up:	Value		itialisation:	1	Defau	ılt value	•				_
				d value:	i			not for input				=
		Trans		only for output):				is (only for in			1	-
Evo	eption Ha		SITIL OIT DUS (C	orny for output).		ITCau	110111 00	is (Offig for it)	put).			
	ерион па	manng										
C :: .	: -! <b>-</b>											
	ecial Featu											
				usually hard wir				<b>-</b> 5				
In s	imple syste	ems a har	d-wired DHW	thermostat may	/ be use	ed instea	ad of the	e rempDHW	sensor	S		

#### LTE-HEE mode:

DID	IILL mou	<b>.</b> .									
FB:	DHWC	LTE Clie	ent Input Name:	Te	empDHW						datory 🗌 otional 🖂
Doco	ription:	_		-							Allorial 🔼
		from a rei	mote DHW temper	cati	iro concor	(DHW)	TS) co	ntaine o	ne actu		
			s used for DHW lo								
			e linked to the DH								atura
			DHWC in order to t								
	storage ta		nivvo ili oldel to t	an	e into acce	Julii tile	unien	siit wate	i tempe	ialuie iev	
			o sensors (illustra	tive	a avamnla	٠.					
			rt temperature): se				sition i	n the Di	HM stora	ane tank v	vith the
			iture. DHW load st								
			temperature): ser								
			ure. DHW load sto								
			eeded by the DHW								
			sensors will send								
			nals are <u>differentia</u>								
	ender.						, ,				
		these two	sensor values to t	he	TempDH\	VSenso	orHigh	and Tei	mpDHW	SensorLo	W
			itomatically in the l				Ū		•		
			ne higher temperat			napped	to the	Temp	) HWSer	nsorHigh (	datapoint
– ti	ne sensor p	roviding th	ne lower temperatu	ıre	value is m	apped	to the	TempD	HWSen:	sorLow da	atapoint
DPT:	Name	DPT_Ten	npHVACAbs_Z		DPT ID	205.10	00 [	atatype	format	V <sub>16</sub> Z <sub>8</sub>	
Field			Description						Sup.	Unit	Default
Temp	DHW		DHW temperature	e v	alue alue				М	°C	
Statu	S		standard Status a	attr	ibutes				М	bitset	
- Out	OfService		void sensor value	e tr	ue / false				M	bool	false
- Fau	It		sensor failure true	e /	false				M	bool	false
- Ove	erridden		sensor value ove	rric	dden true /	false			0	bool	false
- InAl			sensor value alar						0	bool	false
	mUnAck		alarm acknowled	gei	ment statu	s ack /	unack		0	bool	unack
	ther flags		not supported						NA	bool	
	municatior								_		-
	ding Grou	p:	1_					1			
Cla			Туре					Defau	ılt		
	eographica										
	oplication S	pecific⊠	DHWZone			-,		1			
	nassigned		Broadcast		Configura						
	Address:		IO Type(ID):		180 (DHW			perty ID	:	51	
	E-Service (		InfoReport Sniffe	er (	on Binding			-	_		
	foReport	$\boxtimes$	Timeout:			3′	Min				
	E-Service (		Read Wildcard / I	Res	sp Sniffer	on Bind	lina Gr	ono	_		
	ead – Resp				<u> </u>	511 Billo	9 01				
Value	e after Pow	erup:	Default	t V	alue 🛚				,	Stored Va	lue 🗌
	ption Hand									Powerdow	
			pany specific defa	ult	value afte	r powei	r-up or	in case	of com	municatio	າ failure,
if no	sensor data	is receive	∍d.								
	ial Feature										
			are today usually								
In sin	nple system	ns a hard-v	wired DHW thermo	sta	at may be	used in	stead	of the To	empDH\	N sensors	3

## 2.3.4.30 Input DHWPush

## **Standard Mode:**

DP Name:	DΗ	WPush		Abbr.:			Manda	atory	
FB Name:	ď	WC					Can b	e interna	
Description									
see LTE-HEE	Мо	de							
<b>Datapoint Ty</b>									
DPT_Name:	DI	PT_Trigger							
DPT Format:	B₁					DPT_ID:	01.017	7	
Field	D	escription				Supp.	Range	Unit	Default
							{0,1} 1)	bool	0
Access Type	!								
♦ Input									
$N \rightarrow this$			$1 \rightarrow \text{this}$						
Spontaneo	us	$\boxtimes$	Cyclically:			Time	-out:		
Request			Polling:			Perio	d:		
Communicat	ion	Туре							
♦ Group Ob	ject	Datapoint					Mandator	y: 🛛	
Default Gr	oup	Address:							
Dynamics									
Power dov	vn:	Save:							
Power up:		Value:	No initialisation:		Defau	ılt value:			
			Saved value:						
					Read	from bus			
<b>Exception Ha</b>	andl	ing							
Special Feat									
			if condition for a DHW					is 1 = 'tri	gger'.
Value = 0	('no	action') is r	not transmitted and woບ	ıld be igno	ored by	y the rece	iver!		

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

FB: DHWC LTE	Client Input Name:	DHWPush			Mand Opt	atory 🗌 tional 🔯
Description:					-	
This trigger signal is pro requests load of the DH DHW operating mode);	IW storage tank (once	to 'Normal' temperatu				
<b>DPT</b> : Name DPT_	Trigger	DPT ID 1.017	Datatype	format	B <sub>1</sub>	
Field	Description			Sup.	Unit	Default
					enum.	0
Communication:						
Binding Group:						
Class	Туре		Defau	ult		
Geographical Application Specific			1			
Unassigned	☐ Broadcast ☐	Configurable				
DP Address:	IO Type(ID):		Property ID	:	54	
LTE-Service (event):		on Binding Group:	-	-		
InfoReport $\succeq$	1 moode.	N	/lin			
LTE-Service (polling Read – Response	): Read Wildcard / R	esp Sniffer on Binding	g Group: -	-		
Value after Power-up:	Default	Value 🛛	•	5	Stored Val	ue 🗌
<b>Exception Handling:</b>			3	Save at P	owerdowi	n 🔲
-						
Special Features:						
This trigger signal is red 'trigger'. Value = 0 ('no This input can be devic	action') is normally not					=

## 2.3.4.31 Input DHWOtherEnergySource

## **Standard Mode:**

DP Name:	DH	<b>WOtherEner</b>	gySource	Abbr.:		•	Manda	tory	
FB Name:	DH	WC					Can be	internal	
Description									
See LTE-HEE	Е Мо	de							
Datapoint Ty									
DPT_Name:	_	PT_Bool							
DPT Format:	B₁					DPT_ID:			
Field	De	escription				Supp.	Range	Unit	Default
							false, true	bool	cs
Access Type	)								
♦ Input									
$N \rightarrow this$			1 → this						
Spontaneo	ous		Cyclically:			Time-	-out:	121 mir	n
Request			Polling:			Perio	d:		
Communicat	ion	Туре							
♦ Group Ob	oject	Datapoint					Mandatory	/:	
Default Gr	oup.	Address: -							
Dynamics									
Power dov	vn:	Save:							
Power up:		Value:	No initialisation:		Defau	ult value:			
			Saved value:						
					Read	from bus:			
Exception Ha	andli	ing							
Special Feat	ures								

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

FB: DH	IWC	LTE CI	ient Input Name:	DHWOthe	rEnergy	е			latory ☐ tional ⊠	
Descripti	on:	-		-			*			
This signa	al from e.	g. an us	er MMI or manager	nent statior	n indicate	s, that	anoth	ner DHW	energy so	urce is
			DHWC should be o							
Example:			ad during summer t	<u>ime</u>						
DPT:	Name D	PT_Boo	l	DPT ID	1.002	Da	ıtatyp	e format	B <sub>1</sub>	
Field			Description					Sup.	Unit	Default
									bool.	CS
Communication:										
Binding	Group:									
Class			Туре				Defa	ult		
Geogr	aphical									
Applic	ation Spe	ecific	DHWZone				1			
Unass			Broadcast	Configu						
DP Add	lress:		IO Type(ID):	181 (UDF		Prop	erty II	D:	54	
	rvice (ev	ent):	InfoReport Sniffer	on Bindin						
InfoRe	port	$\boxtimes$	Timeout:		121	Min				
	rvice (po		Read Wildcard / R	esn Sniffer	on Rindii	na Gro	un.			
	<ul><li>Respor</li></ul>		Tread Wildeard / Tr	esp offilier	OH DIHUI	ing Oil	up.			
Value aft	er Powe	r-up:	Default '	Value 🛚				(	Stored Val	lue 🗌
<b>Exceptio</b>	n Handli	ng:						Save at F	Powerdow	n 🗌
1										
Special F	eatures:									
This input can be device-internal										

## 2.3.4.32 Input StatusSDHWC

FB: DHWC	LTE Clie	nt Input Name:	StatusSDH	wc				Mand	latory 🗌 tional 🖂
Description:								Ор	tional 🖂
	ins variou	s status information	on concernin	g availabil	ity of s	olar e	nergy. I	t is only pr	ovided if
a solar DHW con	troller SD	HWC is present ir	n the DHWZ	ne. This s					
		sufficient solar ene							
<b>DPT</b> : Name	DPT_Stat	usSDHWC	DPT ID	21.103	Dat	atype	format	B <sub>8</sub>	
Field		Description					Sup.	Unit	Default
Attributes									
- Fault		SDHWC has a fa					М	bool	false
- SDHWLoadActi	-	SDHW load curre					M	bool	false
- SolarLoadSuffic	cient	enough solar end			load to	0	M	bool	false
		reach the DHW t	emperature s	setpoint					
Communication									
Binding Group	):				1				
Class		Туре				Defau	lt		
Geographical									
Application Sp	pecific <u> </u>	DHWZone			· · · · · · · · · · · · · · · · · · ·	1			
Unassigned		Broadcast	Configu						
DP Address:		IO Type(ID):	186 (SDF		Prope	rty ID:		51	
LTE-Service (e		InfoReport Sniffe	er on Binding				-		
InfoReport	$\boxtimes$	Timeout:		31 I	Min				
LTE-Service (p Read – Respo		Read Wildcard /	Resp Sniffer	on Bindin	g Grou	p:	-		
Value after Pow	erup:	Defaul	t Value 🛚			-	;	Stored Val	lue 🗌
<b>Exception Hand</b>	ling:					Sa	ve at Po	werdown	
Special Features	s:								

## 2.3.4.33 Input TempCollectorAct

## **Standard mode**

DP Name:	TempCollector	Act	Abbr.:				Manda	tory	
FB Name:	DHWC						Can be	interna	al 🗌
Description									
Actual solar fla	it plate/tube co	llector temp	erature (usu	ally prov	ided by	/ SDHW	C) ; see cha	oter 2.3	3.1.4
<b>Datapoint Typ</b>	<u>e</u>								
DPT_Name:	DPT_Value_	Temp							
DPT Format:	F <sub>16</sub>					DPT_ID	9.001		
Field	Description					Supp.	Range	Unit	Default
							full range	°C	cs
Access Type									
♦ Input									
$N \rightarrow this$		$1 \rightarrow \text{this}$							
Spontaneo	us 🛚	Су	clically:			Time	e-out:	31 mii	า
Request		Po	lling:			Perio	od:		
Communicati	on Type								
♦ Group Obj	ect Datapoint						Mandatory	/:	
Default Gro	oup Address:								
Dynamics									
Power dow	n: Save:								
Power up:	Value:	No initial	isation:	]		It value:			
		Saved va		]	Actua	l value (r	not for input)	: [	
		on bus (only	for output):		Read	from bus	(only for in	put):	
<b>Exception Ha</b>	ndling								
Special Featu	res								

#### LTE-HEE mode:

FB: DHWC	LTE Clie	nt Input Name:	TempColle				ndatory 🗌 Optional 🔯	
Description:	<u>-</u>		-			-		
Solar flat plate	tube collect	or temperature fro	m SDHWC;	see chapt	er 2.3.1.	4		
<b>DPT:</b> Name	DPT_Ten	npHVACAbs_Z	DPT ID	205.100	Datat	ype forma	at $V_{16}Z_8$	
Field		Description				Sup		Default
TempCollecto	<u> </u>	Collector tempera	ature value			M	°C	
Status		standard Status a	attributes			M	bitset	
<ul> <li>OutOfService</li> </ul>	9	void sensor value				M	bool	false
- Fault		sensor failure tru				M	bool	false
<ul> <li>Overridden</li> </ul>		sensor value ove				0	bool	false
- InAlarm		sensor value alar				0	bool	false
- AlarmUnAck		alarm acknowled	gement statu	ıs ack / un	nack	0	bool	unack
- all other flag		not supported				NA	bool	
Communicat								
Binding Gro	oup:							
Class		Туре			De	efault		
Geographi								
	Specific⊠	DHWZone		<u></u>	1			
Unassigne	<u> </u>	Broadcast	Configur					
DP Address		IO Type(ID):	186 (SDH		Property	/ ID:	52	
LTE-Service	e (event <u>):</u>	InfoReport Sniffe	er on Binding					
InfoReport	$\boxtimes$	Timeout:		31 I	Min			
LTE-Service Read – Re		Read Wildcard / I	Resp Sniffer	on Bindin	g Group:			
Value after P	owerup:	Defaul	t Value 🛚			•	Stored V	alue 🗌
<b>Exception Ha</b>	ndling:					Save at	Powerdow	n 🗌
		pany specific defa	ult value afte	r power-u	ip or in ca	ase of co	mmunicatio	on failure,
if no sensor da	ata is receive	ed.						
Special Featu	res:							

## 2.3.4.34 Parameter: DHWZone

FB:	DHWC	Prope	rty Name ( <u>Server</u> ):	DHWZone	)				datory 🔯
								Op	otional 🗌
Desc	ription:								
LTE z	one: DHW Z	one nu	mber						
DPT:	Name D	PT_Uc	ountValue8_Z	DPT ID	202.002	Dat	atype format	U <sub>8</sub> Z <sub>8</sub>	
Field			Description			Sup.	Range	Unit	Default
Count	terValue		number of DHW Zon	е		M	131		1
Status	3							bitset	
- Out	OfService		zone active /inactive			0	true/false		false
- all o	ther flags		not supported, fixed t	to '0'		NA			
Comn	nand							enum	
- Norr	nalWrite					M			
- SetC	SV & Reset	OSV	set zone inactive / ac	tive		0			
- all o	ther commar	nds	not supported			NA			
Comr	nunication:				_		<del>-</del>	-	
DP A	Address:		IO Type(ID):	177 (DHV	VC)	Prope	rty ID:	101	
(in t	he server)		Start-Index:	1		N° of	elements	1	<b>-</b>
Pro	perty access	s:	Read only		Read/W	rite	$\boxtimes$		
Pro	ection		Read level			Write	level		
Exce	otion Handli	ing:	Value after Powerup:	Stored	Value 🛚	Act Va	alue 🔲 De	fault Valu	e 🗌
				•	•	•		•	•
Speci	al Features	:							
DHW	C DP's are n	ot LTE	communicating if DH	WZone is '	OutOfSer	vice'.	•		

## 2.3.4.35 Parameter DistrSegmH

FB:	DHWC	Proper	ty Name ( <u>Serve</u>	<u>er</u> ):	Distr	SegmF	ł				datory 🛚
Description:											
LTE zoning information : link with the HFDM in the corresponding Heat Distribution Segment											
DPT:	Name	DPT_U	countValue8_Z DPT ID 202.002 Datatype format U						$U_8Z_8$		
Field			Description					Sup.	Range	Unit	Default
Coun	terValue		Heat Distribution Segment number					M	131		1
Status	3									bitset	
- OutOfService			zone active /inactive					0	true/false		false
- all other flags			not supported, fixed to '0'					NA			
Command										enum	
- NormalWrite								M			
- SetOSV & ResetOSV			set zone inactive / active					Ο			
- all other commands			not supported					NA			
Communication:											
DP Address:			IO Type(ID):		177	(DHW	(C)	Prope		102	
(in the server)			Start-Index:	1				elements	1		
Property access:			Read only	only 🗌 Read/Write 🛭					$\boxtimes$		
Protection			Read level				Write	level			
<b>Exception Handling:</b> Value after			Value after Pov	veru	p: S	tored \	∕alue ⊠	Act Va	alue 🗌 De	efault Valu	e 🗌
<del></del>											
Special Features:											
DHWC DP's on the Heat Distribution Segment are not LTE communicating if zone is 'OutOfService'											

2.3.4.36 Parameter TempDHWSwitchDiff

FB: DHWC Pro	perty Name ( <u>Server</u> ):	: TempDHWSwitchDiff					Mandatory ☐ Optional ⊠			
Description:										
DHW switching differential temperature										
<b>DPT</b> : Name DPT	DPT: Name DPT_HVACTempRel_Z DPT ID 205.101					$V_{16}Z_{8}$				
Field	Description			Sup.	Range	Unit	Default			
Temp	temperature delta	value		M	cs	K	cs			
Status						bitset				
- all flags	not supported, fixe	d to '0'		NA						
Command						enum				
<ul> <li>NormalWrite</li> </ul>				M						
- all other commands	not supported	not supported								
Communication:										
DP Address:	IO Type(ID):	IO Type(ID): 177 (DHWC)			rty ID: elements	116				
(in the server)	Start-Index:	Start-Index: 1				1				
Property access:	Read only		Read/W	/rite 🗵						
Protection	Read level			Write	level					
<b>Exception Handling:</b> Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐							e 🗌			
Special Features:										

## ${\bf 2.3.4.37\ Parameter\ TempDHWLoadBoost}$

FB:	DHWC	Proper	ty Name ( <u>Server</u> ):	TempDHWLoadBoost					Mandatory ∐ Optional ⊠		
Description:											
DHW loading boost temperature: for flow temperature setpoint / demand calculation normally a											
temperature offset is added to the DHW temperature setpoint to compensate temperature difference in											
the heat exchanger											
DPT:	Name	DPT_H\	ACTempRel Z DPT ID 205.101 D					tatype format	$V_{16}Z_{8}$		
Field			Description				Sup.	Range	Unit	Default	
Temp			temperature delta value				M	cs	K	CS	
Status									bitset		
- all flags			not supported, fixed to '0'				NA				
Command									enum		
- NormalWrite											
- all other commands			not supported								
Communication:											
DP Address:		IO Type(ID):		177 (DHWC)		Property ID:		117			
(in the server)			Start-Index:	1			N° of	elements	1		
Property access:			Read only		Read/Write						
Protection			Read level			Write level					
<b>Exception Handling:</b> Value afte			Value after Poweru	Powerup: Stored Value ☐ Act Value ☐ Def					fault Value 🗌		
Speci	Special Features:										

# 2.3.4.38 Parameter LoadPriorityDHW

FB:	DHWC	Propert	y Name ( <u>Server</u> ):	Lo	adPriori	tyDHW					datory ☐ otional ⊠
Desc	ription:	-								-	
DHW	load priorit	y: None /	Shift load priority	/ Ab	solute loa	ad priority	,				
DPT:	Name	DPT_Loa	adPriority		DPT ID	20.104	D	atatype for	mat	N <sub>8</sub>	
Field			Description				Sup	. Range		Unit	Default
								{0,1,2}		enum	CS
Comi	municatior	<b>า</b> :							-		
DP	Address:		IO Type(ID):	,	177 (DHV	VC)	Prop	erty ID:		118	
(in t	the server)	)	Start-Index:	•	1		N° o	f elements	;	1	
Pro	perty acce	ss:	Read only			Read/W	'rite	$\boxtimes$			
Pro	tection		Read level	-	-		Write	e level			
Exce	ption Hand	dling:	Value after Power	up:	Stored	Value 🛚	Act '	Value 🗌	Def	fault Valu	е 🗌
Spec	ial Feature	es:	-		•			-			

# 2.3.4.39 Diagnostic data TempFlowWaterSetpDHW

FB:	DH	WC	Proper	ty N	lame ( <u>Server</u> ):	Te	empFlow\	VaterSet	рD	HW				datory 🗌 otional 🏻
Desc	rinti	on:											<u> </u>	nioriai 🖂
	_		fla tana		tura aataaint af	46.		o= DLI\\/ I		<u>ــــــ</u>				
					ture setpoint of	tne				_				
DPT:	N	lame	DPT_H\	/AC	TempAbs_Z		DPT ID	205.100	)	Dat	atype forma	ıt \	$V_{16}Z_{8}$	
Field				Des	scription				S	up.	Range		Jnit	Default
Temp	)			tem	nperature value					M	cs	٥	С	cs
Status	S											b	itset	
- Out	OfSe	ervice		=>	no setpoint (e.g.	. n	o DHW loa	ad	(	0	true/false			false
				acti	ive)									
- Ove	rridd	len		exte	ernal override of	f th	ne setpoint			0	true/false			false
- all o	ther	flags		not	supported, fixed	d to	o '0'		١	NΑ				
Comr	nanc	d		sta	ndard Command	d fi	eld					е	num	
- Ove	rride	& Rel	ease	ove	erride and releas	e :	setpoint		(	0				
- all o	ther	comm	ands	not	supported		·		١	NΑ				
Comr	mun	icatio	า:									-		
DP.	Add	ress:		IC	Type(ID):		177 (DHW	/C)	Р	rope	rty ID:	1	10	
(in t	he s	server)		St	tart-Index:		1		N	° of e	elements	1		
Pro	pert	у ассе	ess:	R	ead only			Read/W	rite	)	□ 1)			
Pro	tecti	ion		R	ead level				W	/rite	level		-	
Exce	ptio	n Hand	dling:	Val	ue after Poweru	ıp:	Stored	Value 🗌	Α	ct Va	alue 🛛 D	efa	ult Value	e 🗌
Spec	ial F	eature	es:											
1) opti	onal	Write	access for	or O	verride / Releas	e 1	function or	nly			·		· · · · · · · · · · · · · · · · · · ·	

# 2.3.4.40 Diagnostic data StatusLoadPumpDHW

FB: DHWC Prope	rty Name ( <u>Server</u> ):	StatusLoad	dPumpDl	HW			datory 🗌 otional 🖂		
Description:						-			
Actual relative power of	the DHW load pump	)							
<b>DPT</b> : Name DPT_R	elValue_Z	DPT ID	202.001	Dat	atype format	$U_8Z_8$			
Field	Description			Sup.	Range	Unit	Default		
RelValue	relative value			M	0100%	%	CS		
Status						bitset			
<ul> <li>OutOfService</li> </ul>	RelValue valid / vo	oid		Ο	true/false		false		
- all other flags	not supported, fixe	d to '0'		NA					
Communication:	-		·	•	-		-		
DP Address:	IO Type(ID):	177 (DHV	VC)	Prope	rty ID:	111			
(in the server)	Start-Index:	1		N° of	elements	1			
Property access:	Read only	$\boxtimes$	Read/W	rite					
Protection	Read level			Write	level				
<b>Exception Handling:</b>	Value after Poweru	up: Stored	Value 🗌	Act Va	alue 🗵 🏻 De	fault Value	e 🗌		
-									
Special Features:	pecial Features:								
for switched pump 0%=	off, 100%=on								

# 2.3.4.41 Diagnostic data ThermostatDHWHigh

FB:	DHWC	Propert	y Name ( <u>Server</u> ):	Th	ermosta	tDHWHiç	gh					datory 🗌 otional 🖂
Desci	ription:	•	•								_	
status	of the DH\	N thermo	stat with higher pos	sitic	on / temp	erature						
DPT:	Name	DPT_Sw	vitch		DPT ID	1.001	D	atat	ype forn	nat	B <sub>1</sub>	
Field			Description				Sup	. R	ange	l	Jnit	Default
								0	n/off	b	ool	off
Comr	nunication	n:										
DP /	Address:		IO Type(ID):	•	177 (DHV	VC)	Prop	erty	/ ID:	1	12	
(in t	he server)		Start-Index:	•	1		N° o	f ele	ements	1		
Pro	perty acce	ss:	Read only	$\boxtimes$		Read/W	/rite					
Prot	ection		Read level	-	-		Write	e le	/el	-	-	
Excep	otion Hand	lling:	Value after Poweru	ıp:	Stored	Value	Act '	Valu	ıe 🛛	Defa	ult Valu	e 🗌
Speci	al Feature	s:										
											_	_

# 2.3.4.42 Diagnostic data ThermostatDHWLow

FB:	DHWC	Property	y Name ( <u>Server</u>	): T	hermosta	tDHWLo	W			ndatory 🗌 optional 🖂
Desc	ription:	-							ë	
status	s of the DH	W thermo	stat with lower p	ositi	on / tempe	rature				
DPT:	Name	DPT_Sw	itch		DPT ID	1.001	Dat	atype forma	t B₁	
Field	<u> </u>		Description				Sup.	Range	Unit	Default
								on/off	bool	off
Comi	munication	1:					<del>-</del>	-		
DP.	Address:		IO Type(ID):		177 (DHV	/C)	Prope	rty ID:	113	
(in t	the 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	erup:	Stored	Value 🗌	Act V	alue 🗵 🏻 D	efault Valu	ue 🗌
Spec	ial Feature	s:	-		•		•	-		

# 2.3.4.43 Diagnostic data Fault

FB: DHV	NC	Propert	y Name ( <u>Server</u> ):	Fa	ault						datory 🗌 otional 🗵
Description	n:								-		
Some erro	r in the	DHWC									
DPT: Na	ame	DPT_Bo	ol		DPT ID	1.002	Dat	atype format	B <sub>1</sub>		
Field			Description				Sup.	Range	Un	it	Default
								true/false	bo	ol	false
Communi	cation	:				-					
DP Addr	ess:		IO Type(ID):		177 (DHW	/C)	Prope	rty ID:	11	4	
(in the se	erver)		Start-Index:		1		N° of e	elements	1		
Property	acce	ss:	Read only	$\boxtimes$		Read/W	rite				
Protection	on		Read level				Write	level			
<b>Exception</b>	Hand	ling:	Value after Poweru	ıp:	Stored '	Value 🗌	Act Va	alue 🗵 🛮 De	efaul	lt Value	e 🗌
Special Fe	eature	s:			_		-	·			_
						•					

# 2.3.4.44 Diagnostic data ErrorCodeDHWC

FB:	DHWC	Property	y Name ( <u>Server</u> ):	Ε	rrorCodeDHWC					ndatory 🗌 Optional 🔯
Descr	iption:									
Comp	any specifi	c numerio	c 16 bit error code							
DPT:	Name	DPT_Val	ue_2_Ucount		DPT ID 7.001	Data	aty	oe format	U <sub>16</sub>	
Field			Description			Sup.	Ra	inge	Unit	Default
							ful	range		cs
Comn	nunication	1:			-					•
DP A	Address:		IO Type(ID):		177 (DHWC)	Prope	rty	ID:	115	
(in t	he server)		Start-Index:		1	N° of e	eler	nents	1	
Prop	perty acces	ss:	Read only	$\boxtimes$	Read/W	rite				
Prot	ection		Read level			Write	leve	el		
Excep	otion Hand	lling:	Value after Poweru	ıp:	Stored Value	Act Va	alue	e 🛛 De	fault Val	ue 🗌
Speci	al Feature	s:								

## **2.4** Functional Block: DHW Circulation Pump Controller (DHWCPC)

### 2.4.1 Functional Specification

DHW circulation pump is controlled by the functional block DHW Circulation Pump Controller DHWCPC.

Main purpose of the DHWCPC:

- reduce runtime of the DHW circulation pump to a minimum (energy saving, noise)
- In some DHW systems the DHW circulation pump should be disabled during DHW load.

The circulation pump is usually hard wired to the DHWCPC. Connection of an intelligent remote pump via bus is in principle possible but not described in this document since control signal(s) to an intelligent pump are not yet specified.

The mechanisms of DHWCPC are company specific. The following input signals can be used in order to decide whether the circulation pump is on or off. See also overview in chapter 2.1.5

Ю	decide whether the circulation p	bump is on or our. See also overview in chapter 2.1.5
-	'DHWModeEff'	Contains the effective DHW operating mode from DHWSM. It may depend on automatic time schedule, local user operation (MMI) etc. On/off ratio of the circulation pump may depend on the DHW operating mode
-	'DHWModeEffNext'	Contains the next DHW operating mode and the time until change of mode. This information may be used to turn the pump on some time before e.g. 'Normal' level is requested
-	'DHWModeAct'	Contains the locally active DHW operating mode of the DHWC which may be different of DHWModeEff due to local/external optimiser function or DHWPush => if present, DHWModeAct normally supersedes DHWModeEff
-	'StatusDHWC'	Status from DHWC containing various information which can be useful for optimisation, e.g.:  - DHW push status: may be used to turn on the pump for a certain time  - DHW load status: to avoid DHW circulation during DHW load
-	'TempDHWSetpAct'	Currently active DHW temperature setpoint in the DHWC
-	'TempDHWSensorHigh'	Current DHW start temperature is used to avoid transport of cold water if DHW temp is low or much below the 'TemDHWSetpAct'
-	'TempDHWSensorLow'	Current DHW stop temperature is used to avoid transport of cold water if DHW temp is low or much below the 'TemDHWSetpAct'
-	'DHWCPPush'	This signal provided by an MMI indicates that the user requests temporary DHW circulation independent of the actual DHW operating mode. This input is a trigger which starts circulation pump running for a certain time (depending on the parameter RunTimeCPPush)
_	EnableDHWCP	This signal is e.g. provided by an scheduler. It enables / disables the

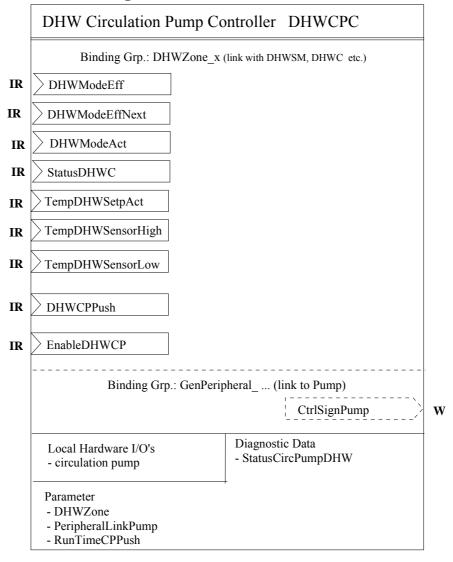
#### 2.4.2 Constraints

The DHWCPC is often combined with the DHWC and/or DHWSM in the same device and therefore some of the inputs of the DHWCPC may be device-internal.

circulation pump independent of the actual DHW Mode (schedule for

DHW circulation may be independent of DHW load).

# 2.4.3 Functional block diagram



# 2.4.4 Datapoint description

### **2.4.4.1** Overview

Datapoint	Description	Datapoint Type	DPT N°
Outputs			
CtrlSignPump	placeholder (not yet defined): command for DHW circulation pump with bus interface	t.b.d, probably complex DPT	t.b.d.
Inputs			
DHWModeEff	present/active 'DHWMode' from DHWSM / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
DHWModeEffNext	next DHW operating mode and time until change of mode from DHWSM	DPT_DHWModeNext	206.102
DHWModeAct	currently active DHW mode used by the DHWC / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
StatusDHWC	Status attributes of DHWC	DPT_StatusDHWC	22.100
TempDHWSetpAct	currently active DHW temperature setpoint in the DHWC / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempDHWSensorHigh	current DHW temperature of the sensor with higher position/temperature (DHW start temp) / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempDHWSensorLow	current DHW temperature of the sensor with lower position/temperature (DHW stop temp) / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
DHWCPPush	DHW circulation pump push command from MMI => trigger	DPT_Trigger	01.017
EnableDHWCP	enables / disables DHW circulation pump (e.g. from a scheduler)	DPT_Enable	1.003
Parameters			
DHWZone	LTE zone: DHW zone number	DPT_UcountValue8_Z	202.002
PeripheralLinkPump	LTE zoning number Peripheral link to pump	DPT_UcountValue16_Z	203.012
RunTimeCPPush	run time of circulation pump after DHWCPPush trigger	DPT_TimePeriodMin	07.006
Diagnostic Data			
StatusCircPumpDHW	actual relative power of the DHW circulation pump, % value; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001

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

			STANDARD MODE	EXTER MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	CrlSignPump not yet defined				
Inputs	DHWModeEff	$(GO_b)$		(GO)	О
	DHWModeEffNext	<b>NA</b> 1)	NA	NA	О
	TempDHWSetpAct	$(GO_b)$		(GO)	О
	DHWModeAct	(GO <sub>b</sub> )		(GO)	О
	StatusDHWC	<b>NA</b> 1)	NA	NA	О
	TempDHWSensorHigh	(GO <sub>b</sub> )		(GO)	О
	TempDHWSensorLow	(GO <sub>b</sub> )		(GO)	О
	DHWCPPush	(GO <sub>b</sub> )		(GO)	О
	EnableDHWCPC	(GO <sub>b</sub> )		(GO)	О

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

Table 7: DHWCPC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DHWZone	M
	PeripheralLinkPump	О

**Table 8: DHWCPC LTE specific Properties** 

		Support
Parameter	RunTimeCPPush	О
		О
Diagnostic Data	StatusCircPumpDHW	О
		О

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

#### 2.4.4.2 Output CtrlSignPump

To be defined later together with pump manufacturers.

## 2.4.4.3 Input DHWModeEff

#### **Standard Mode:**

DP Name:		VModeEff				Abbr.:	-			Ма	ndat	ory	
FB Name:	DHV	VCPC								Cai	n be	internal	$\boxtimes$
Description													
present/active	·'DH'	WMode' fr	om DHV	VSM									
<b>Datapoint Ty</b>	ре												
DPT_Name:	DF	T_DHWN	lode										
DPT Format:	N <sub>8</sub>							D	PT ID:	20.	103		
Field	De	scription						,	Supp.	Rang	ge	Unit	Default
		•								14	1)		CS
Access Type													
♦ Input													
$N \rightarrow this$		]	$1 \rightarrow th$	is 🛛									
Spontaneo	us		•	Cyclically:					Time-	-out:		31min	
Request				Polling:					Perio	d:			
Communicat	ion T	ype											
♦ Group Ob										Manda	atory	: 🛛	
Default Gro	oup A	Address:								•			
Dynamics													
Power dow	n:	Save:											
Power up:		Value:	No in	itialisation:			Defa	ault	value:				
			Save	d value:									
							Rea	d fro	om bus:				
<b>Exception Ha</b>	ndli	ng											
Special Featu	ıres												
1) value 0='Au	to' is	not allowe	ed and s	hall be ignore	ed =	> use d	efault	t val	ue				

LTE-HEE Mode: Optional input; otherwise same as in DHWC

## 2.4.4.4 Input DHWModeEffNext

**Standard Mode: NA** 

**LTE-HEE Mode:** Optional input; otherwise same as in DHWC

# 2.4.4.5 Input DHWModeAct

### **Standard Mode:**

DP Name:	DHW	'ModeAct			Abl	or.:				Man	date	ory	
FB Name:	DHW	'CPC								Can	be	internal	$\boxtimes$
Description													
See LTE-HEE	mod	е											
<b>Datapoint Ty</b>	ре												
DPT_Name:	DP.	T_DHWM	ode										
DPT Format:	N <sub>8</sub>							DPT	[_ID:	20.1	03		
Field	Des	scription						Su	pp.	Range	е	Unit	Default
										14	1)	-	CS
<b>Access Type</b>													
◆ Input													
$N \rightarrow this$			$1 \rightarrow th$	is 🛛									
Spontaneo	us	$\boxtimes$		Cyclically:	$\boxtimes$			•	Time-	-out:		31min	
Request				Polling:					Perio	d:			
Communicat	ion T	уре											
♦ Group Ob	ject D	atapoint								Mandat	ory:	$\boxtimes$	
Default Gro	oup A	ddress:											
Dynamics													
Power dow	/n:	Save:											
Power up:	,	Value:	No in	itialisation:		D	efau	ılt va	lue:			$\boxtimes$	
			Save	d value:									
						R	Read	from	bus:				
<b>Exception Ha</b>	ındlin	g											
<b>Special Featu</b>													
1) value 0='Au	to' is r	not allowe	ed and s	hall be ignore	ed => us	e defa	ault v	/alue					

#### LTE-HEE Mode:

FB: DHWCPC LTE	ClientInput Name:	DHWMod	eAct		Mandatory Optional						
Description:		-					<u> </u>				
This input contains the cur			y the DHW	VC whi	ch m	ay be d	lifferent fro	om			
DHWModeEff due to an o											
If available, this input will u		ver DHWM	odeEff								
	_	DPT ID	201.102	Datat	ype	format	$N_8Z_8$				
Field	Description					Sup.	Unit	Default			
DHWMode	currently active DHV [14] <sup>1)</sup>	V Mode in [	DHWC, rai	nge		M	enum.	CS			
Status	standard Status attri	ibutes									
- Overridden	DHW mode overrido	den true / fa	lse			0	bool	false			
- all other flags not supported NA NA											
Communication:											
Binding Group:											
Class	Туре			De	efaul	t					
Geographical 🔲											
Application Specific⊠	DHWZone		<u></u>	1							
Unassigned	Broadcast	Configural									
DP Address:		177 (DHWC		roperty	/ ID:		56				
LTE-Service (event):	InfoReport Sniffer of	on Binding (									
InfoReport 🖂	Timeout:		31 M	in							
LTE-Service (polling):	Read Wildcard / Res	sn Sniffer o	n Rindina	Group.							
Read – Response		·	Diriding	Стоир.							
Value after Power-up: Default Value ⊠ Stored Value □											
Exception Handling:					Sav	ve at Po	werdown				
Special Features:											
	s input can be device-internal alue 0='Auto' is not allowed => to be ignored by the DHWC => use default value										

# 2.4.4.6 Input StatusDHWC

Standard mode: NA LTE-HEE mode:

FB:	DHWCPC	LTE (	Client Input Name:	Status	OHWC					latory 🗌 tional 🏻	
Desc	ription:										
This s	signal contains	variou	s status information	of the DH	WC which i	may b	e use	d by the	DHWCP	C in	
			e circulation pump is		Some of th	ne attr	ibutes	of Stat	usDHWC	are	
usual	ly are not relev	ant for	circulation pump cor	ntrol							
DPT:	Name DP	T_Stat	usDHWC	DPT ID	22.100	Dat	atype	format	B <sub>16</sub>		
Field			Description					Sup.	Unit	Default	
Attrib	utes		•								
- Faul	lt		DHWC has a failure	<b>!</b>				0	bool	false	
- DHV	VLoadActive		DHW load is current	tly active				0	bool	false	
- Legi	- LegioProtActive legionella protection procedure active (load & hold)									false	
- DHV	VPushActive		true during DHW loa	ad trigger	ed by a 'DH	lWPus	sh'	Ο	bool	false	
	erEnergySourc	е	load by DHWC is dis			active		0	bool	false	
Activ			energy source (e.g.					(0)	l	١	
- Sola	rEnergyOnly		load by DHWC is dis	sabled du	ie to sufficie	ent so	lar	(O)	bool	false	
			energy								
	rEnergySuppo		DHW load is partly of					(O)	bool	false	
- Tem	pOptimShiftAc	tive	actual DHW temp se			by		(O)	bool	false	
_			TempDHWSetpOpti	mShift ≠	0						
	munication:										
	ding Group:		-								
Clas			Туре			l l	Defau	lt			
	eographical	<u></u>									
	plication Spec	ific⊠	DHWZone				1				
	nassigned		Broadcast	Configu							
DP.	Address:		IO Type(ID):	177 (DH\	NC) I	Prope	rty ID:		55		
LTE	-Service (eve	nt):	InfoReport Sniffer	on Bindin				-			
InfoReport											
LTE	-Service (poll	ing):	Read Wildcard / Res	on Sniffor	on Binding	ı Grou	ın.				
Re	ead – Respons	e	Read Wildcald / Res	sp Silliei	on binding	Giou	ıp	-			
Value	after Poweru	p:	Default V	alue 🛚			•	;	Stored Va	lue 🗌	
Exce	ption Handling	g:				•	Sa	ve at Po	werdown		
Spec	ecial Features:										
This i	nput can be de	vice-in	ternal								

# 2.4.4.7 Input TempDHWSetpAct

### **Standard mode**

DF	Name:	Tem	pDHWSetp	Act		Abbr.:					Ma	anda	tory		
B	Name:	DHV	VCPC								Ca	an be	intern	al	$\boxtimes$
De	scription														
se	e LTE-HEE	mod	е												
Da	tapoint Ty														
	PT_Name:		T_Value_T	emp											
DF	PT Format:	F <sub>16</sub>							DP	T_ID:	9.0	001			
Fie	eld	De	scription						Sup	p.	Rang	е	Unit	Defa	ult
											full ra	nge	°C	С	S
Ac	cess Type														
<b>♦</b>	Input														
	$N \rightarrow this$		]	$1 \rightarrow th$	is	$\boxtimes$									
	Spontaneo	us			Cyclica	ally:	$\square$			Time	-out:		31 mi	n	
	Request				Polling	<b>j</b> :				Perio	d:				
Co	mmunicat	ion T	уре												
•	Group Ob	ject [	Datapoint								Mand	latory	/:		
	Default Gro	oup A	Address:												
Dy	namics														
	Power dow	n:	Save:												
	Power up:		Value:		itialisat			Defau	ılt va	lue:			$\boxtimes$		
					d value		]				ot for i				
			Transmit o	n bus (	only for	output):		Read	fron	า bus	(only f	for in	put):		
Ex	ception Ha	ındli	าg												
Sp	ecial Featu	ıres													

#### LTE-HEE mode:

FB:	DHWCPC	; L	TE C	Client Input Name:	Temp[	HWSetp	Act				datory ☐ otional ⊠
Desci	ription:	-			<del></del>			<u>-</u>			
This in	nput is pro	vided	by th	e DHWC contains th	e currently	active D	HW te	empera	ature se	tpoint of th	ne DHW
zone											
DPT:	Name	DPT_	_Tem	pHVACAbs_Z	DPT ID	205.100	Da	tatype	format	$V_{16}Z_{8}$	
Field				Description					Sup.	Unit	Default
Temp	erature			DHW temperature s	etpoint va	lue			М	°C	cs
Status	3			standard Status attri	ibutes				М	bitset	
- Out	OutOfService void setpoint value								M	bool	false
- Ove	- Overridden setpoint value overridden true / false								0	bool	false
- all other flags not supported									NA		
Comr	nunicatio	<b>า</b> :							_		
Bind	ding Grou	p:									
Clas	S			Type				Defau	ılt		
	ographica										
Ap	plication S	pecific	c⊠	DHWZone				1			
Un	assigned			Broadcast	Configur						
DP /	Address:			IO Type(ID):	177 (DHW	/C)	Prop	erty ID	:	52	
LTE	-Service (	event	:):	InfoReport Sniffer of	on Binding	Group:		_	=		
Inf	oReport		$\boxtimes$	Timeout:		31	Min				
	<b>-Service (</b> ad – Resp			Read Wildcard / Res	sp Sniffer	on Bindin	g Gro	up: -	=		
Value	after Pow	erup:	:	Default Va	alue 🛚			-	;	Stored Va	lue 🗌
Excep	otion Hand	dling:						Sa	ve at Po	owerdown	
Speci	al Feature	es:									
This in	nput can b	e devi	ice-in	ternal							

# 2.4.4.8 Input TempDHWSensorHigh

### **Standard mode**

DP I	Name:	Tem	pDHWSe	nsorHigh	1	Abbr.:					Mano	atory		
FB N	Name:	DHV	VCPC								Can b	e interr	ıal	$\boxtimes$
Des	cription													
Curr	ent value	of th	e DHW te	mperatu	re sens	or with h	igher p	osition/t	emp	eratur	e (DHW s	start ten	ıperatu	ıre)
Data	apoint Ty													
	_Name:		PT_Value_	_Temp										
DPT	Format:	F <sub>16</sub>							DP	T_ID:	9.001			
Field	<u>t</u>	De	scription						Sup	op.	Range	Unit	Defa	ult
											full range	e °C	CS	s
Acc	ess Type													
<b>*</b>	Input													
1	$N \rightarrow this$		]	$1 \rightarrow th$	is	$\boxtimes$								
S	Spontaneo	us	$\square$		Cyclica	ally:	$\boxtimes$			Time	-out:	31 m	in	
F	Request				Polling	<b>j</b> :				Perio	d:			
Con	nmunicati	on 1	<b>'уре</b>											
	Group Ob										Mandato	ry:	<u>]                                    </u>	
	Default Gro	oup A	\ddress:											
Dyn	amics													
F	Power dow	'n:	Save:											
F	Power up:		Value:	No ir	itialisat	ion:		Defa	ult va	alue:		$\triangleright$	]	
					d value	_	<u>]                                    </u>				ot for inpu		]	
			Transmit	on bus (	only for	output):		Read	fron	n bus	(only for	nput):		
Exc	eption Ha	ndli	ng											
Spe	cial Featu	ires												

#### LTE-HEE mode:

FB:	DHWCPC	LTE (	Client Input Name:	TempD	HWSenso	rHigh			latory ☐ tional ⊠
Desci	ription:	-		<u>-</u>		-			
			ne DHWC contains th		value of the	DHW te	mperatur	e sensor v	vith
highe	r position/ter	mperatur	e (DHW start tempera	ature)					
DPT:	Name [	OPT_Ten	npHVACAbs_Z	DPT ID	205.100	Datatyp	e format	$V_{16}Z_{8}$	
Field			Description				Sup.	Unit	Default
Temp	erature		DHW temperature v	alue			M	°C	cs
Status	3		standard Status attri	butes				bitset	
- Faul	Fault sensor failure true / false							bool	false
- InAla	arm		sensor value alarm t	true /false			0	bool	false
- Aları	AlarmUnAck alarm acknowledgement status ack / unack							bool	false
- all other flags not supported NA									
Comr	nunication:	1	•				<del>-</del>	<del>-</del>	<del>-</del>
Bind	ding Group	:							
Clas	-		Туре			Defa	ault		
	ographical								
	plication Sp	ecific⊠	DHWZone			1			
Un	assigned		Broadcast	Configur					
	Address:			177 (DHW		roperty I	D:	53	
	-Service (e	vent):	InfoReport Sniffer of	on Binding	g Group:				
Inf	oReport	$\boxtimes$	Timeout:		31 Mi	in			
	-Service (pead – Respo		Read Wildcard / Res	sp Sniffer	on Binding	Group:			
Value after Powerup: Default Value ⊠								Stored Va	lue 🗌
	otion Handl		Boldali V					owerdown	
	J.J. Hallal						, a , o a , i ,		
Speci	al Features	::							
	his input can be device-internal								

# 2.4.4.9 Input TempDHWSensorLow

### **Standard mode**

DP Name:	TempDHWSe	nsorLow	Abbr.:				Manda	tory	
FB Name:	DHWCPC						Can be	intern	al 🖂
Description									
Actual value o	f the DHW ten	nperature sens	sor with lov	ver posit	ion/tem	perature	(DHW stop	tempe	rature)
<b>Datapoint Typ</b>	o <u>e</u>								
DPT_Name:	DPT_Value_	_Temp							
DPT Format:	F <sub>16</sub>					DPT_ID:	9.001		
Field	Description					Supp.	Range	Unit	Default
							full range	°C	cs
Access Type									
♦ Input									
$N \rightarrow this$		$1 \rightarrow \text{this}$							
Spontaneo	us 🛚	Cycl	ically:			Time	-out:	31 mii	ำ
Request		Polli	ng:			Perio	od:		
Communicati	on Type								
♦ Group Obj	ject Datapoint						Mandatory	/:	
Default Gro	oup Address:								
Dynamics									
Power dow	n: Save:								
Power up:	Value:	No initialis	ation:			It value:			
		Saved val			Actua	I value (n	ot for input)		
		on bus (only f	or output):		Read	from bus	(only for in	put):	
<b>Exception Ha</b>	ndling								
Special Featu	ires								

#### LTE-HEE mode:

FB:	DHWCPC	LTE (	Client Input Name:	TempD	HWSens	sorLow	′			latory □ tional ⊠
Desc	ription:						-			
This is	nput is provide	d by th	e DHWC contains the	e current v	alue of th	he DH\	N tem	peratur	e sensor v	vith lower
position	on/temperature	(DHV	V stop temperature)							
DPT:	Name DP	T_Ten	npHVACAbs_Z	DPT ID	205.100	Dat	atype	format	$V_{16}Z_{8}$	
Field			Description					Sup.	Unit	Default
Temp	erature		DHW temperature va	alue				М	°C	cs
Status	3		standard Status attri	butes					bitset	
- Faul	- Fault sensor failure true / false							M	bool	false
- InAla	arm		sensor value alarm t	rue /false				0	bool	false
- Aları	mUnAck		alarm acknowledger	nent statu	s ack / ur	nack		Ο	bool	false
- all o	- all other flags not supported									
Comr	nunication:		<del></del>						-	-
Bine	ding Group:									
Clas	SS		Туре				Defau	lt		
Ge	eographical									
Ap	plication Spec	ific⊠	DHWZone			]	1			
Ur	nassigned		Broadcast	Configura	able 🗌					
DP A	Address:			177 (DHW		Prope	rty ID:		54	
LTE	-Service (ever	nt):	InfoReport Sniffer of	on Binding	Group:			-		
Inf	oReport	$\boxtimes$	Timeout:		31	Min				
	-Service (pollead – Response		Read Wildcard / Res	sp Sniffer o	on Bindin	g Grou	ıp:	-		
Value	after Poweru	p:	Default Va	alue 🛚			-	;	Stored Va	lue 🗌
Exce	ption Handling	g:					Sa	ve at Po	werdown	
Speci	ial Features:									
This is	is input can be device-internal									

# 2.4.4.10 Input DHWCPPush

### **Standard Mode:**

DP Name:	: D	HWCPPush		Abbr.:			Manda	tory	
FB Name:	D	HWCPC					Can be	internal	
Description	on								
see LTE-H	HEE M	lode							
Datapoint	Туре	•							
DPT_Nam		DPT_Trigger							
DPT Form	at:	B <sub>1</sub>				DPT_ID:	01.017		
Field		Description				Supp.	Range	Unit	Default
							{0,1}	bool	0
Access T	ype								
♦ Input									
$N \rightarrow th$	is		$1 \rightarrow \text{this}$						
Sponta	neous	S 🛛	Cyclically:			Time	-out:		
Reques	st		Polling:			Perio	d:		
Communi	icatio	n Type							
♦ Group	Obje	ct Datapoint					Mandatory	/:   <del> </del>	
Default	Grou	p Address:							
Dynamics	<b>3</b>								
Power	down	: Save:							
Power	up:	Value:	No initialisation:		Defau	ılt value:		$\square$	
			Saved value:						
					Read	from bus	:		
Exception	n Han	dling							
Special Fo									
			if condition for a DHW						
is 1 = '	trigge	r'. Value = 0 (	'no action') is not transi	mitted and	l woul	d be igno	red by the r	eceiver!	

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

FB:	DHWCPC	LTE (	Client Input Name:	DHWCP	Push				Mand Op	latory 🗌 tional 🖂		
Desc	ription:			-			1		<u> </u>			
			led by e.g. an MMI or circulation independe									
			ion pump running for							15 a		
	imeCPPush)	• • • • • • • • • • • • • • • • • •	раттр тапп			,		о разан				
DPT:	Name DP	T_Trig	ger	DPT ID	1.017	Data	type	format	B <sub>1</sub>			
Field			Description					Sup.	Unit	Default		
									enum.	0		
Comi	munication:						-		-			
Bin	Binding Group:											
Clas	SS		Туре			D	efaul	t				
	eographical											
	plication Spec	ific⊠	DHWZone		<u></u>	1						
	nassigned		Broadcast	Configur								
	Address:			181 (UDF		Propert	y ID:		55			
	-Service (eve	Ć	InfoReport Sniffer	on Binding								
	oReport	$\boxtimes$	Timeout:			Min						
	- <b>Service (poll</b> ead – Respons		Read Wildcard / Res	sp Sniffer	on Bindir	ng Group	:					
Value	after Power-i	up:	Default V	alue 🛚				,	Stored Val	lue 🗌		
Exception Handling: Save at Powerdown												
	ial Features:											
	his trigger signal is received once if condition for a DHW circulation pump push occurred: the datapoint											
	alue is 1 = 'trigger'. Value = 0 ('no action') is normally not transmitted and would be ignored by the											
receiv												
This i	nput can be de	vice-in	iternal									

# 2.4.4.11 Input EnableDHWCP

### **Standard Mode:**

DF	Name:	Enab	leDHWCI	)			Abbr.:	-			Mar	ndate	ory	
FB	Name:	DHW	'CPC								Car	n be	internal	
De	escription													
se	e LTE-HEE	Mode	9											
	tapoint Ty													
	PT_Name:	DP	T_Enable											
DF	PT Format:	B <sub>1</sub>				DP	T_ID:	1.00	03					
Fie	eld	Des	Description						S	upp.	Rang	je	Unit	Default
													bool	CS
Ac	cess Type													
•	Input													
	$N \rightarrow this$			$1 \rightarrow th$	is 🛛									
	Spontaneo	us	$\boxtimes$		Cyclically:		$\boxtimes$			Time-	-out:		31min	
	Request				Polling:					Perio	d:			
Co	ommunicati	ion T	уре											
<b>♦</b>	Group Ob	ject D	atapoint								Manda	tory:		
	Default Gro	oup A	ddress:										-	
Dy	/namics													
	Power dow	/n:	Save:											
	Power up:	,	Value:	No ir	nitialisation:		]	Defa	ault v	alue:				
				Save	ed value:									
						Rea	d fror	n bus:						
Ex	ception Ha	ndlin	g											
Sp	ecial Featu	ıres												

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

FB: DHWCPC LTE	Client Input Name:	EnableD	HWCP			Mandatory ☐ Optional ⊠			
Description:		-			-		-		
This input is provided by a	DHW circulation pur	np schedu	ler and e	nables	/ disa	bles DH	W circulat	ion	
pump		т							
<b>DPT</b> : Name DPT_Ena	able	DPT ID	1.003	Dat	tatype	format	B <sub>1</sub>		
Field	Description					Sup.	Unit	Default	
							enum.	CS	
Communication:	•					-	-	-	
Binding Group:									
Class	Туре	Defau	efault						
Geographical 🔲									
Application Specific⊠	DHWZone	1							
Unassigned 🔲	Broadcast Configurable								
DP Address:	IO Type(ID):	112 (DHW	(CPS)	Prope	rty ID		51		
LTE-Service (event):	InfoReport Sniffer	on Binding	Group:		-	=			
InfoReport 🖂	Timeout:		31	Min					
LTE-Service (polling): Read – Response	Read Wildcard / Re	sp Sniffer	on Bindin	g Grou	ıp: -	-			
Value after Power-up:	Default V	alue 🛚			· <u>·</u>	9	Stored Val	ue 🗌	
Exception Handling:				Sa	ve at Po	werdown			
Special Features:					•				
his input can be device-internal									

## 2.4.4.12 Parameter: DHWZone

FB:	DHWCPC	Pr	ope	erty Name ( <u>Server</u> ):	DHWZor	DHWZone						datory 🛚
Desc	ription:	•			-							
LTE z	one: DHW	Zone	nun	nber								
DPT:	Name	DPT_I	Ucc	ountValue8_Z	DPT ID	202.002		Dat	atype forma	at L	$J_8Z_8$	
Field			]	Description			Sı	up.	Range	U	nit	Default
Coun	terValue		r	number of DHW Zone	е		1	M	131			1
Statu	S		T							bi	itset	
- Out	OfService		Z	zone active /inactive			(	0	true/false			false
- all o	ther flags		r	not supported, fixed t	IA							
Comr	nand							e	num			
	malWrite											
- Set0	DSV & Res	etOSV		set zone inactive / active								
- all o	ther comm	ands	r	not supported								
Comi	nunicatio	n:										
DP	Address:			IO Type(ID):	179 (DHW	/CPC)	Pr	rope	rty ID:	1	01	
(in t	he server	)		Start-Index:	1		N	° of e	elements	1		_
Pro	perty acce	ess:		Read only		Read/W	rite	;	$\boxtimes$			
Pro	tection			Read level			W	'rite	level		-	
<b>Exception Handling:</b> Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐										e 🗌		
<del></del>												
Spec	ial Feature	es:										
DHWC DP's are not LTE communicating if DHWZone is 'OutOfService'.												

# 2.4.4.13 Parameter PeripheralLinkPump

FB:	DHWCPC		,	Peripheral			datory 🔲					
		(Ser	<u>ver</u> ):					Op	otional 🔀			
Desci	ription:	<del>-</del>	·					<del>-</del>				
LTE z	oning num	ber Perip	oheral link to circulatio	n pump: pı	ımp is no	t yet de	efined. This d	atapoint is	s a			
placel	nolder.	-						-				
DPT:	Name	DPT_U	countValue16_Z	DPT ID	203.012	Dat	atype format	$U_{16}Z_{8}$				
Field	ield Description Sup. Range U											
Count	erValue		peripheral link number	er		M	full	-	1			
Status	3							bitset				
- Out	OfService		zone active /inactive			Ο	true/false		false			
- all o	ther flags		not supported, fixed t	o '0'	NA							
Comn	nand							enum				
- Norr	nalWrite				M							
- SetC	SV & Res	etOSV	set zone inactive / ac	tive		0						
- all of	ther comm	ands	not supported			NA						
Comr	nunicatio	n:										
DP A	Address:		IO Type(ID):	179 (DHW	(CPC)	Prope	rty ID:	103				
(in t	he server)	)	Start-Index:	1		N° of	elements	1				
Pro	perty acce	ess:	Read only		Read/W	rite	$\boxtimes$					
Protection Read level Write level												
Exce	otion Hand	dling:	Value after Powerup:	Stored \	∕alue ⊠	Act Va	alue 🔲 🏻 Def	fault Value	e 🗌			
Speci	Special Features:											
									•			

## 2.4.4.14 Parameter RunTimeCPPush

FB:	DHWCPC	Prop	erty Name ( <u>Server</u> )	: RunTim	eCPPush	า			datory 🗌 otional 🗵
Desc	ription:			_				<del>-</del>	
run tir	ne of circulation	n pun	np after DHWCPPus	n trigger					
DPT:	Name DP	T_Tin	nePeriodMin	71				U <sub>16</sub>	
Field			Description			Sup.	Range	Unit	Default
							CS	min	CS
Comr	munication:					-		•	
DP A	Address:		IO Type(ID):	179 (DHV	VCPC)	Prope	rty ID:	111	
(in t	he server)		Start-Index:	1		N° of	elements	1	
Pro	perty access:		Read only		Read/W	/rite	$\boxtimes$		
Prof	tection		Read level			Write	level		
Exce	ption Handlin	g:	Value after Powerup	: Stored	Value 🛚	Act Va	alue 🔲 De	fault Value	e 🗌
Speci	ial Features:								

# 2.4.4.15 Diagnostic data StatusCircPumpDHW

•	erty Name ( <u>Server</u> ):	Statusci	Mandatory U								
						Op	otional 🔯				
		-				·					
of the	e DHW circulation pu	mp									
_Rel\	/alue_Z	DPT ID	202.001	Dat	atype format	$U_8Z_8$					
	Description			Sup.	Range	Unit	Default				
re	elative value			M	0100%	%	cs				
						bitset					
			Ο	true/false		false					
n	ot supported, fixed to	o '0'		NA							
5			-		-						
	IO Type(ID):	179 (DHW	(CPC)	Prope	rty ID:	110					
	Start-Index:	1		N° of	elements	1					
	Read only		Read/W	rite							
	Read level			Write	level						
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☒ Defaul											
Special Features: or switched pump 0%=off, 100%=on											
	Rel\ F n	RelValue_Z Description relative value  RelValue valid / void not supported, fixed to  IO Type(ID): Start-Index: Read only Read level  Value after Powerup:	Description relative value  RelValue valid / void not supported, fixed to '0'  IO Type(ID): 179 (DHW Start-Index: 1 Read only  Read level Value after Powerup: Stored v	RelValue_Z DPT ID 202.001  Description relative value  RelValue valid / void not supported, fixed to '0'  IO Type(ID): 179 (DHWCPC) Start-Index: 1 Read only  Read/W Read level  Value after Powerup: Stored Value	RelValue_Z       DPT ID       202.001       Date of the part of the	RelValue_Z       DPT ID       202.001       Datatype format         Description       Sup.       Range         relative value       M       0100%         RelValue valid / void not supported, fixed to '0'       O true/false         IO Type(ID):       179 (DHWCPC)       Property ID:         Start-Index:       1       N° of elements         Read only       Read/Write       □         Read level        Write level         Value after Powerup:       Stored Value       Act Value       De	Post the DHW circulation pump  RelValue Z DPT ID 202.001 Datatype format U <sub>8</sub> Z <sub>8</sub> Description Sup. Range Unit M 0100% %  RelValue valid / void O True/false NA bitset  RelValue valid / void NA True/false NA Tr				

## 2.5 Functional Block: Solar Domestic Hot Water Controller (SDHWC)

### 2.5.1 Functional Specification

See also figure in chapter 2.1.4

In solar energy supported DHW systems and additional Solar Domestic Hot Water Controller (SDHWC) is present besides the DHWC. Usually SDHWC works autonomously, i.e. SDHWC provides as much energy as possible to the DHW storage tank. Internal SDHWC control mechanisms are very company specific and not part of this specification.

Conventional DHW load by the DHWC may be influenced by the availability of solar energy. Usually conventional DHW load will be stopped or reduced, if sufficient solar energy is available. This is decided by the DHWC. The SDHWC provides the 'StatusSDHWC' and 'TempCollectorAct' containing information about availability of solar energy.

Inputs:

'TempCollector' is the flow-temperature from flat plate/tube collector. This sensor is

usually hard wired but also a bus connected remote sensor is possible.

'StatusDHWC' containing various status information from DHWC

'TempDHWSetpAct' actual DHW temperature setpoint in the DHWC

- 'TempDHWSensorHigh' actual DHW start temperature of DHW storage tank near solar heat

exchanger

- 'TempDHWSensorLow' actual DHW stop temperature of DHW storage tank

Output:

Signal for solar pump I/0

- 'StatusSDHWC' DHWC load control containing information about availability of solar

energy, solar load status

- 'TempCollectorAct' actual collector temperature (e.g. for an MMI)

SDHW load function (example):

DT = 'TempCollector' - 'TempDHWSensorLow'

If DT > 6 - 8 K then solar pump on

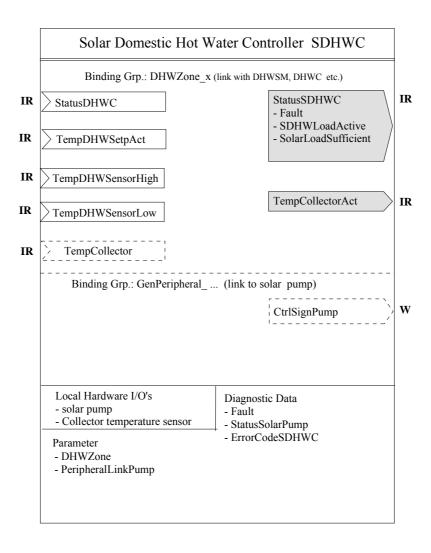
If DT < 2 K then solar pump off

If 'TempDHWSensorHigh' > 65°C then solar pump off

#### 2.5.2 Constraints

Only one SDHWC is allowed in one DHWZone

## 2.5.3 Functional block diagram



# 2.5.4 Datapoint description

### **2.5.4.1** Overview

Datapoint	Description	<b>Datapoint Type</b>	DPT N°
Outputs			
StatusSDHWC	indicates whether solar energy for DHW load is available or not	DPT_StatusSDHWC	21.103
- Fault	failure, some error in the SDHWC	DPT_Bool	1.002
- SDHWLoadActive	SDHW load currently active, solar pump is running	DPT_Bool	1.002
- SolarLoadSufficient	enough solar energy available for DHW load to reach the DHW temperature setpoint	DPT_Bool	1.002
TempCollectorAct	Current collector temperature used by SDHWC / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
CtrlSignPump	placeholder (not yet defined): command for DHW solar pump with bus interface	t.b.d, probably complex DPT	t.b.d.
Inputs			
StatusDHWC	Status attributes of DHWC	DPT_StatusDHWC	22.100
TempDHWSetpAct	Actual DHW temperature setpoint / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempDHWSensorHigh	actual DHW temperature sensor with higher position/temperature (DHW start temp) / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempDHWSensorLow	actual DHW temperature sensor with lower position/temperature (DHW stop temp) / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
TempCollector	collector temperature sensor value / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
Parameters			
DHWZone	LTE zone: DHW zone number	DPT_UcountValue8_Z	202.002
PeripheralLinkPump	LTE zoning number Peripheral link to solar pump	DPT_UcountValue16_Z	203.006
Diagnostic Data			
Fault	failure, some error in the SDHWC	DPT_Bool	1.002
StatusSolarPump	actual relative power of the solar pump, % value; for switched pump 0%=off, 100%=on	DPT_RelValue_Z	202.001
ErrorCodeSDHWC	company specific numeric error code	DPT_Value_2_Ucount	7.001

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

			STANDARD MODE	EXTEN MO	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	StatusSDHWC	<b>NA</b> 1)	NA	M	
	- Fault	$GO_b$	GO	GO	NA
	- SDHWLoadActive	$GO_b$	GO	GO	NA
	- SolarLoadSufficient	$GO_b$	GO	GO	NA
	TempCollectorAct	$GO_b$	GO	GO	M
	CrlSignPump not yet defined				
Inputs	StatusDHWC	<b>NA</b> 1)	NA	NA	О
	TempDHWSetpAct	(GO <sub>b</sub> )		(GO)	О
	TempDHWSensorHigh	(GO <sub>b</sub> )		(GO)	О
	TempDHWSensorLow	(GO <sub>b</sub> )		(GO)	О
	TempCollector	(GO <sub>b</sub> )		(GO)	О

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

Table 10: SDHWC Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DHWZone	M
	PeripheralLinkPump	О

**Table 11: SDHWC LTE specific Properties** 

		Support
Parameter		
		О
Diagnostic Data	Fault	О
	StatusSolarPump	О
	ErrorCodeSDHWC	О

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

# 2.5.4.2 Output StatusSDHWC

Standard mode: separate datapoints Fault, SDHWLoadActive, SolarLoadSufficient

### LTE-HEE mode:

FB:	SDHWC	LTE S	Server Output Name:	StatusSE	DHWC					datory 🖂		
Desci	iption:											
used t	or visualiz	ation or o	ous status information optimized DHW load cergy is available)									
DPT:	Name	DPT_St	atusSDHWC	DPT ID	21.103		Datatype	format	B <sub>8</sub>			
Field			Description	Description			ge	Unit	COV	Default		
	t WLoadAct		solar pump is running	OHW load currently active,			false false false	bool bool	Y Y Y	false false false		
	rLoadSuffi		enough solar energy for DHW load to reac DHW temperature se	h the	M	true/	false	bool	Y	false		
	Communication:											
	ding Grou	p:										
Clas			Туре	Type Default								
	ographica											
	plication S	pecific X	<del></del>	DHWZone 1								
	assigned			Broadcast Configurable								
	Address:	, ,	IO Type(ID):	186 (SDHV			perty ID		51			
Inf	- <b>Services</b> oReport ſE Read-R		Output per default o	<u>/linRepTime</u> communicat			sec ding Gro		tbeat: card allov	15 min wed		
	lling of the		Tx Prio:	High 🗌		N	Iormal 🛭		Low	′ 🔲		
su	all always l pported)		Transm after Power	up: Stored	l Value		Act Valu	ue 🛛 🏻 🗈	Default V	alue 🗌		
	perty-Serv ividual ac		Read only		Read/V	Vrite						
Excep	otion Hand	dling:						Save	at Power	down		
Speci	al Feature	es:										

# 2.5.4.3 Output Fault

### **Standard mode**

DP Name	OP Name: Fault						Abbr.:				Manda	Mandatory		
FB Name	e: \$	SDHW	٧C								Can be	interna	al 🔲	
Descript	tion													
reports a	failure	e in th	e SD	HWC	; mainly	y used	for visua	alisation						
Datapoii	nt Typ	е												
DPT_Na	me:	DPT	_Boo	ol										
DPT For	mat:	B <sub>1</sub>								DPT_ID:	1.002			
Field		Desc	criptic	n						Supp.	Range	Unit	Default	
													false	
Access Type														
♦ Outp	♦ Output													
this -	this $\rightarrow$ M $\square$ this $\rightarrow$ 1 $\square$													
Spont	taneou	aneous 🛛 COV: 🔲 Δ-Value: Min repetition period: 10s												
				Cycli	С	$\boxtimes$	Period:	15 M	1in					
Requ	est		$\boxtimes$											
Commu	nicatio	on Ty	ре											
♦ Grou	ıp Obje	ect Da	atapo	int							Mandatory	y: 🛛 🖂		
Defau	ılt Gro	up Ad	dress	s: -										
Dynamic	CS													
Powe	r dowr	n: S	ave:											
Powe	r up:	V	alue:		No init	tialisat	ion:		Defau	ılt value:		$\square$		
					Saved		-	<u>]                                    </u>	Actua	l value (n	ot for input	): 📗		
	Transmit on bus (only for output): Read from bus (only for input):													
Exception	Exception Handling													
Special	Featu	res												

LTE-HEE mode: NA

# 2.5.4.4 Output SDHWLoadActive

### Standard mode

DP Name:	SDHWLoadActive Abbr.:								Manda	Mandatory					
FB Name:	SD	HWC					Can be internal								
Description															
indicates whether SDHW load is currently active and solar pump is running															
Datapoint Type															
DPT_Name:	D	PT_Boo	ol												
DPT Format:	В	1						DPT_ID: 1.002							
Field	D	escription (	on					Supp.	Range	Unit	Defaul	t			
										false					
Access Type	)														
♦ Output															
this $\rightarrow$ M		$\boxtimes$	th	nis → 1											
Spontaneo	ous	$\boxtimes$	COV:		Δ-Value		Min	repetition	period:	10s					
	Cyclic Period: 15 Min														
Request		$\boxtimes$													
Communicat	tion	Type													
♦ Group Ol	t Datapo	oint			Mandatory:										
Default Gr	oup	Addres	s:	-											
Dynamics															
Power dov	vn:	Save:													
Power up:		Value	:	No initialisa	tion:		Defau								
	Save					]	Actua	ual value (not for input):							
Transmit on bus (only for output): Read									ad from bus (only for input):						
Exception H	and	ling													
<b>Special Feat</b>	ures	S													

LTE-HEE mode: NA

# 2.5.4.5 Output SolarLoadSufficient

### **Standard mode**

DP Name:	So	olarLoad	Sufficie	ent	Abbr.:									
FB Name:	SDHWC Can be internal													
Description														
indicates who	ethe	r enougl	h solar	energy is av	vailable fo	r DHW Id	oad to	reach the	DHW temp	perature	e setpoint			
Datapoint Type														
DPT_Name:		DPT_Bo	ol											
DPT Format:		3 <sub>1</sub>						DPT_ID:						
Field	[	Descripti	on					Supp.	Range	Unit	Default			
								fals						
Access Type	•													
♦ Output														
this $\rightarrow$ M		$\boxtimes$		his $\rightarrow$ 1										
Spontane	ous		COV:		Δ-Value:		Min	repetition	period:	10s				
			Cyclic	igtriangle	Period:	15 Mi	n							
Request														
Communica	tior	n Type												
♦ Group O	bjec	t Datapo	oint					Mandatory:						
Default G	rou	o Addres	s:	_										
<b>Dynamics</b>														
Power do	wn:	Save:												
Power up		Value	:	No initialisa			Defau							
				Saved value	_		ıal value (not for input):							
Transmit on bus (only for output):								ad from bus (only for input):						
<b>Exception H</b>	anc	lling												
Special Feat	ure	s												

LTE-HEE mode: NA

# 2.5.4.6 Output TempCollectorAct

### **Standard mode**

DP Nan	ne:	TempCollectorAct										Manda	Mandatory					
FB Nam	ne:	SDH	IWC										Can b	Can be internal				
Descrip																		
Currently value of the solar collector temperature sensor of the SDHWC																		
Datapoint Type																		
DPT_N		DPT_Value_Temp																
DPT Fo	rmat:	F <sub>16</sub>										DPT_ID:			_			
Field		De	scripti	on								Supp.	Range	Unit	Default			
_													full range	°C	CS			
Access	Туре																	
♦ Out	put																	
this -	$\rightarrow M$				his $\rightarrow 1$									_				
Spor	ntaneoı	JS	$ \boxtimes$	COV:		$\boxtimes$	Δ-Valu	ıe:	2 K		Ν	Min repetition	n period:	10s				
				Cyclic		$\boxtimes$	Period	:	15 I	Min								
Requ																		
Commu													•					
	up Obj												Mandator	y:   🗵				
	ult Gro	up A	Addres	ss: -	-													
Dynami																		
	er dow	n:	Save:					_										
Pow	er up:		Value	:	No init							fault value:						
Saved va						~ .	Ш		_	ctual value (not for input):								
Transmit on bus (only for							r output	):	Ш	R	ea	d from bus	(only for ir	nput):				
Excepti	ion Ha	ndlir	าg															
Special	l Featu	res																

#### LTE-HEE mode:

FB:	SDHWC	LTE S	Server Output Name:	Server Output Name: TempCollectorAct							
	ription:							_			
Curre	nt value of th	ne sola	r collector temperature	sensor of	the SDI	HWC					
DPT:	Name D	PT_Te	empHVACAbs_Z	DPT ID	205.10	0 Datatype	e format \	$V_{16}Z_{8}$			
Field		De	escription		Sup.	Range	Unit	COV	Default		
Temp		ter	mperature value		М	full	°C	2	cs		
Status			andard Status attribute	-							
- Faul			nsor failure true / false		M	true/false	bool	Υ	false		
- InAla			nsor value alarm true		0	true/false	bool	Υ	false		
- Aları	mUnAck		arm acknowledgement	status	0	ack/unack	bool	Υ	unack		
			k / unack								
	ther flags		t supported		ļ						
Comn			andard Commands, W	rite only							
- Aları			arm acknowledge		0						
- all of		no	t supported		NA						
comm											
Comr	nunication:					-	_				
	ding Group:										
Clas	ss		Туре			Defa	ult				
	eographical										
Ap	plication Spe	ecific $oxtime $	DHWZone			1					
	assigned		Broadcast	<u> </u>							
DP A	Address:		IO Type(ID):	52							
LTE	-Services (e	event):	COV 🛛 N	beat: 15 min							
	oReport	$\boxtimes$	Output per default of	ard allow	ved $\square$						
	ΓΕ Read-Res			oup Wildcard allowed							
•	lling of the o		Tx Prio:	Tx Prio: High Normal							
	all always be	;	Transm after Power	un: Stored	مبراد/\	☐ Act Va	ا الكاميا	efault Va	□ مبياد		
	pported)		Transmatter rower	up. Storeu	value	Act va		Clault V			
	perty-Servic ividual acce		Read only		Read/V	Vrite 🗵	] 1)				
								4 Dayyan	d a		
⊏xce	otion Handli	ng:					Save a	t Power	uown		
Cmas	al Factures	_									
	al Features:		Ale for Alongo A ale fees atta	n anlı							
/ Writ	e access is o	puona	il; for AlarmAck functio	n only							

## 2.5.4.7 Output CtrlSignPump

To be defined later together with pump manufacturers.

#### 2.5.4.8 Input StatusDHWC

Standard mode: NA

LTE-HEE mode: same as in DHWCPC, see chapter 2.4.4.6

Some attributes have no effect on the SDHWC or must be ignored to avoid a 'closed loop' with DHWC:

- SolarEnergyOnly
- SolarEnergySupport

### 2.5.4.9 Input TempDHWSetpAct

same as in DHWCPC, see chapter 2.4.4.7

#### 2.5.4.10 Input TempDHWSensorHigh

same as in DHWCPC, see chapter 2.4.4.8

### 2.5.4.11 Input TempDHWSensorLow

same as in DHWCPC, see chapter 2.4.4.9

# 2.5.4.12 Input TempCollector

### Standard mode

1 PD	Name:	Tem	pCollector			Abbr.:						Mandatory				
FB N	Name:	SDH	WC								Can	be i	interna	al	$\boxtimes$	
Des	cription															
Curr	ent solar f	lat pl	ate/tube coll	ector	senso	r value (fr	om rer	note sen	sor)							
	Datapoint Type															
	_Name:		DPT_Value_Temp													
DPT	Format:	F <sub>16</sub>								T_ID:	9.00					
Field	<u></u>	De	scription						Su	pp.	Range		Unit	Defa	ult	
											full rang	ge	°C	C	<u>s</u>	
Acc	ess Type															
<b>♦</b>	Input															
N	$I \rightarrow this$		1	$\rightarrow$ th	is	$\boxtimes$										
S	Spontaneo	us			Cyclic	cally:	ılly: 🛛 Time-o				-out:	ut: 31 min				
F	Request				Pollin	g:			Period:							
Con	nmunicati	on T	уре													
•	Group Ob	ject [	Datapoint								Mandat	ory:				
	Default Gro	oup A	ddress: -	-												
Dyn	amics															
F	Power dow	n:	Save:													
F	Power up:		Value:	No initialisation:					Default value:							
					d valu	· ·						for input):				
Transmit on bus (only for						r output):		Read	fror	n bus	(only for	inp	ut):			
Exc	eption Ha	ndlir	ng													
Spe	cial Featu	ires														

### LTE-HEE mode:

FB:	SDHWC	LTE CI	ient Input Name:	TempColl	ector					datory 🗌 otional 🗵
Desci	ription:	_		-					<u>-</u>	
Curre	nt solar flat p	late/tube	e collector sensor va	alue (from r	emote ser	nsor)				
DPT:	Name D	PT_Tem	npHVACAbs_Z	DPT ID	205.100	Dat	tatype	format	$V_{16}Z_{8}$	
Field			Description					Sup.	Unit	Default
	Collector		Collector temperati					M	°C	cs
Status			standard Status attributes				M	bitset		
- Faul			sensor failure true	/ false				M	bool	false
- Out	OfService		void sensor value t	rue / false				Ο	bool	false
	rridden		sensor value overri					Ο	bool	false
- InAla			sensor value alarm					Ο	bool	false
	mUnAck		alarm acknowledge	ement statu	is ack / una	ack		0	bool	unack
- all of	ther flags		not supported					NA	bool	
Comr	nunication:									
Bind	ding Group:									
Clas	-		Type				Defau	lt		
Ge	ographical									
Ap	plication Spe	ecific	DHWZone				1			
Un	assigned		Broadcast	Configur	able 🗌					
DP A	Address:		IO Type(ID):	187 (COL	TS)	Prope	rty ID:		51	
LTE	-Service (ev	ent):	InfoReport Sniffer	on Binding	g Group:			-		
	oReport	$\boxtimes$	Timeout:		31 N	∕lin				
	-Service (po		Read Wildcard / Re	esn Sniffer	on Rinding	r Grou	ın	_		
Re	ad – Respor	nse				9 0100	<i>ι</i> ρ.			
Value	after Powe	rup:	Default \	/alue ⊠					Stored Va	lue 🗌
Excep	otion Handli	ng:					Sa	ve at Po	werdowr	
	Special Features:									
This in	his input can be device-internal. The sensor is often hard-wired									

# 2.5.4.13 Parameter: DHWZone

FB:	SDHWC	Pro	ре	erty Name ( <u>Server</u> ):	DHWZo	ne		datory 🖂			
_					_						otional 🗌
	ription:										
LTE z	one: DHV	/ Zone n	um	ıber							
DPT:	Name	DPT_U	СО	untValue8_Z	ntValue8_Z DPT ID 202.002 Datatype format U <sub>8</sub> Z <sub>8</sub>						
Field	Field			Description			S	up.	Range	Unit	Default
Coun	terValue		n	umber of DHW Zone	)			M	131		1
Status	 S		1							bitset	[
- Out	OfService		z	one active /inactive				0	true/false		false
- all other flags			n	ot supported, fixed to	o '0'		1	NΑ			
Command			Ī							enum	[
- NormalWrite							M				
- SetC	OSV & Res	setOSV	s	set zone inactive / active				0			
- all o	ther comm	nands	n	ot supported			1	NΑ			
Comr	nunicatio	n:								1	
DP.	Address:			IO Type(ID):	186 (SDF	IWC)	Р	rope	rty ID:	101	
(in t	he server	)		Start-Index:	1		N	° of	elements	1	
Pro	perty acc	ess:		Read only		Read/W	rite	9	$\boxtimes$		
Pro	tection			Read level			W	/rite	level		
Exce	Exception Handling: Value after Powerup: Stored Value ☑ Act Value ☐ Default Value ☐										
Spec	Special Features:										
DHW	C DP's are	not LTI	E c	ommunicating if DHV	NZone is	'OutOfSe	rvi	ce'.			

### 2.5.4.14 Parameter PeripheralLinkPump

FB:	SDHWC		perty Name ver):	Periphera	ndatory []				
Desc	ription:	\		-					<u> </u>
LTE 2	zoning numbe	r Perip	heral link to solar pu	mp: pump i	s not yet	defined	d. This datar	point is a	
place	holder.		•		-		•		
DPT:	Name DI	PT_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 numb	er		М	full		1
Status								bitset	
- OutOfService zone active /inactive			zone active /inactive			0	true/false		false
			not supported, fixed	ed to '0'					
Comr	Command							enum	
	malWrite					M			
- Set	OSV & Reset(	OSV	set zone inactive / a	ctive		0			
- all o	ther comman	ds	not supported			NA			
Com	munication:				•	-	-	•	•
DP	Address:		IO Type(ID):	186 (SDH	WC)	Prope	erty ID:	103	
(in t	the server)		Start-Index:	1		N° of	elements	1	
Pro	perty access	:	Read only		Read/W	'rite	$\boxtimes$		
Pro	tection		Read level			Write	level		
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Default Value ☐									
Special Features:									

# 2.5.4.15 Diagnostic data Fault

FB:	SDHWC	Proper	ty Name ( <u>Server</u> ):	Fault						datory 🔲
									Op	otional 🛚
Desc	ription:	·							-	
Some	e error in the	SDHWC	•							
<b>DPT</b> : Name DPT_Bo			I	DPT ID 1.002 Datatype format B			B <sub>1</sub>			
Field			Description			Sup.	Range	L	Jnit	Default
							true/false	b	ool	false
Comr	munication:	<del>-</del>			-					
DP.	Address:		IO Type(ID):	, , ,		110				
(in t	he server)		Start-Index:	1		N° of	elements	1		
Pro	perty access	s:	Read only		Read/W	rite				
Pro	tection		Read level			Write	level	_	-	
Exce	ption Handli	ing: ∖	alue after Powerup	: Stored	Value 🗌	Act Va	alue 🛛 🛚 I	Defa	ult Value	e 🗌
Spec	ial Features	:								
			·							

# 2.5.4.16 Diagnostic data StatusSolarPump

FB:	SDHWC	Prop	erty Name ( <u>Server</u> ):	StatusSolarPump					datory 🔲
									otional 🖂
Desc	ription:			-				•	
Actua	I relative powe	r of th	e solar pump						
DPT:	Name DP	T_Re	Value_Z	DPT ID	202.001	Dat	atype format	$U_8Z_8$	
Field			Description			Sup.	Range	Unit	Default
RelVa	alue		relative value			M	0100%	%	cs
Status								bitset	
- OutOfService			RelValue valid / void			0	true/false		false
- all o	ther flags		not supported, fixed to	o '0'		NA			
Com	nunication:				•	=	-	-	
DP.	Address:		IO Type(ID):	186 (SDH	WC)	Prope	erty ID:	111	
(in t	he server)		Start-Index:	1		N° of	elements	1	
Pro	perty access:		Read only		Read/W	/rite			
Pro	tection		Read level			Write	level		
<b>Exception Handling:</b> Value after Powerup: Stored Value  Act Value  Default Va						fault Valu	e 🗌		
Spec	Special Features:								
for sv	vitched pump (	)%=o	ff, 100%=on			•			

# 2.5.4.17 Diagnostic data ErrorCodeSDHWC

FB:	SDHWC	Prope	rty Name ( <u>Server</u> ):	ErrorCod	leSHHWC	;			ndatory 🗌 ptional 🔯
Descr	ription:	-						-	
Comp	any specific	numeri	c 16 bit error code						
DPT:	Name D	PT_Va	lue_2_Ucount	DPT ID	7.001	Dat	atype forma	it U <sub>16</sub>	
Field			Description			Sup.	Range	Unit	Default
							full range		CS
Comn	nunication:	-			•			•	•
DP /	Address:		IO Type(ID):	186 (SDF	HWC)	Prope	rty ID:	112	
(in t	he server)		Start-Index:	1		N° of e	elements	1	
Prop	perty access	s:	Read only		Read/W	rite			
Prot	ection		Read level			Write	level		
Excep	otion Handli	ng:	Value after Powerup	Stored	Value	Act Va	alue 🛛 🏻 D	efault Valu	ıe 🗌
Speci	al Features:								

### 2.6 Functional Block: DHW Temperature Sensor (DHWTS)

### 2.6.1 Functional Specification

The functional block 'Domestic Hot Water Temperature Sensor' measures the temperature in the DHW storage tank and provides the data to the bus / system.

Normally two independent DHW temperature sensors are connected to a DHW storage tank: i.e. DHW High (start) and DHW Low (stop) sensors. In LTE mode this two sensors are located in the same LTE zone (see below).

The distribution of the DHW temperature in the system is event-driven (COV-condition, change of value) and in addition repeated periodically.

Optional feature: The sensor value may be corrected by a parameter value.

In the LTE-Mode the DHWTS supports LTE DHW zoning,

i.e. multiple DHW temperature values may be distributed in the system in parallel for different DHW zones.

Optional features in LTE Mode:

- Faults in the sensor device may be detected and reported.
- The sensor value may temporary be overridden by means of a tool for service purposes. The 'Overridden' condition must be reported.
- Alarm limits may be detected by the sensor and are reported. The alarm may be acknowledged.
- The sensor may be set / reset out of service by means of a tool for service purposes.

#### **Output**

- TempDHW This output provides the DHW temperature to the bus.

#### **Parameters**

- TempCorrValue This parameter specifies the correction value for the sensor.

TempCOVCondition This parameter defines the delta temperature value at

which the information spontaneously is transmitted.

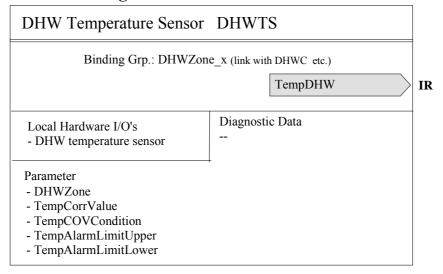
- TempAlarmLimitUpper This value can be used to create an alarm.

TempAlarmLimitLower This value can be used to create an alarm.

#### 2.6.2 Constraints

DHW sensors are today often hard-wired to the DHWC

### 2.6.3 Functional block diagram



# 2.6.4 Datapoint description

### **2.6.4.1** Overview

Datapoint	Description	Datapoint Type	DPT N°
Outputs			
TempDHW	Current DHW temperature sensor value / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
Inputs			
Parameters			
DHWZone	LTE zone: DHW zone number	DPT_UcountValue8_Z	202.002
TempCorrValue	For offset correction of the sensor value	DPT_TempHVACRel_Z	205.101
TempCOVCondition	Value for COV condition	DPT_TempHVACRel_Z	205.101
TempAlarmLimitUpper	Upper alarm limit for generating STATUS 'Alarm'	DPT_TempHVACAbs_Z	205.100
TempAlarmLimitLower	Lower alarm limit for generating STATUS 'Alarm'	DPT_TempHVACAbs_Z	205.100
Diagnostic Data			

<sup>\*)</sup> 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	TempDHW	$GO_b$	GO	GO	M
Inputs					

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

		Support
Parameter	DHWZone	M

**Table 14: DHWTS LTE specific Properties** 

		Support
Parameter	TempCorrValue	О
	TempCOVCondition	О
	TempAlarmLimitUpper	О
	TempAlarmLimitLower	О
Diagnostic Data		

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

# 2.6.4.2 Output TempDHW

### **Standard Mode:**

DP Name:	TempDHW	Abbr.:		Mandat	Mandatory				
FB Name:	TempDHWAbbr.:Mandatory✓DHWTSCan be internal□								
Description									
	ntains the value of the DHW temperatu	ire sensor							
<b>Datapoint Type</b>	oe .								
DPT_Name:	DPT_Value_Temp								
DPT Format:	F <sub>16</sub>		DPT_ID:	9.001					
Field	Description		Supp.	Range	Unit	Default			
	Full °C cs								
Access Type									
♦ Output									
this $\rightarrow$ M									
Spontaneo	Spontaneous   COV:   Delta-Value:   2 K   MinRepTime:   10sec								
	Cyclic Period: 15min (recommended value)								
Request									
Communicati	on Type								
	ect Datapoint			Mandatory	:   🛛				
	oup Address:								
Dynamics									
Power dow									
Power up:	Value: No initialisation:	] Defau	ult value:						
	Saved value:		ıl value:						
	Transmit on bus:								
Exception Handling									
Special Features									
'' COV see p	1) COV see parameter								

### LTE-HEE Mode:

FB:	DHWTS	LTE S	Server Output Name:	TempDH	N				Mandatory ⊠ Optional □	
Desci	ription:	<u>!</u>								
		ns the d	current value of the DH	W tempera	ature se	ensor				
DPT:			mpHVACAbs_Z		205.10		atatype	format \	/ <sub>16</sub> Z <sub>8</sub>	
Field	1100110		Description		Sup.			Unit	COV	Default
Temp			DHW temperature val	ue	M	Full Range		°C	2 1)	CS
Status			standard Status attrib				·¥			
- Faul	t		sensor failure true / fa	lse	M true/false bool			Υ	false	
- Out	OfService		void sensor value true	0	true/f	alse	bool	Υ	false	
- Ove	rridden		Sensor is temporarily		0	true/f	alse	bool	Υ	false
			overridden							
- InAla			sensor value alarm tru		0	true/f		bool	Υ	false
- Aları	mUnAck		alarm acknowledgeme	ent status	0	ack/u	ınack	bool	Υ	unack
			ack / unack							
- all other flags			not supported							
Command			standard Commands, only	Write						
- Override / Release		Temporary override /	release of	0						
o vollido / Trolodoo			sensor value							
		Set / reset of out of se	ervice	0						
- Aları	mAck		alarm acknowledge		0					
- all of	ther commar	nds	not supported		NA					
Comr	nunication:									
Bind	ding Group:									
Clas	SS		Туре				Defau	ılt		
	eographical									
Ap	plication Spe	ecific $oxtime $	DHWZone				1			
	nassigned		Broadcast	Configura						
	Address:			180 (DHW		Pro	perty ID			
	-Services (e			linRepTime		10	sec	Hearth	peat:	15 min
Inf	oReport	$\boxtimes$	Output per default co	ommunicat	ing	Rinc	lina Gra	oup Wildca	ard allow	red 🗆
			$\boxtimes$					<u> </u>		
	TE Read-Res		Tx Prio:	High 🗌		N	ormal 🛭	$\leq$	Low	
	lling of the or		T " D	01 1						. —
	all always be	:	Transm after Power-	-up: Storea	value	<u></u>	Act Valu	ne 🖂 De	efault Va	ilue 🔛
	pported) perty-Servic									
	ividual acce		Read only		Read/V	Vrite				
Exce	otion Handli	ng:						Save a	t Powerd	lown
Speci	ial Features:									
1) CC	OV see parar	neter	<u> </u>						_	

### 2.6.4.3 Parameter: DHWZone

FB:	DHWTS	Pro	pe	rty Name ( <u>Server</u> ):	DHWZo	ne			datory 🛚		
Desci	ription:										Alloriai 🔲
	one: DHW	Zone n	um	ber							
DPT:				untValue8 Z	DPT ID	202.002	2	Dat	atype format	U <sub>8</sub> Z <sub>8</sub>	
Field	1.10	escription				лр.	Range	Unit	Default		
CounterValue				umber of DHW Zone	<del>,</del>			V	131		1
Status			- †							bitset	
- OutOfService			z	one active /inactive			(	)	true/false		false
- all other flags				not supported, fixed to '0'							
Command										enum	
- Norr	nalWrite										
- SetC	OSV & Res	etOSV	set zone inactive / active					)			
- all of	ther comm	ands	not supported				Ν	ΙA			
Comr	nunicatio	n:				•				•	
DP A	Address:			IO Type(ID):	180 (DHV	VTS)	Pr	ope	rty ID:	101	
(in t	he server)	)		Start-Index:	1		N°	of e	elements	1	•
Pro	perty acce	ess:		Read only		Read/W	rite		$\boxtimes$		
Prot	ection			Read level			W	rite	level		
Exception Handling: Value after Powerup: Stored Value ☐ Act Value ☐ Defaul								fault Valu	e 🗌		
	-										
Speci	al Feature	es:									
DHW	DHWTS is not LTE communicating if DHWZone is 'OutOfService'.										

### 2.6.4.4 Parameter TempCorrValue

FB: I	DHWTS	Prope	erty Name ( <u>Server</u> ):	TempCor	Mandatory Coptional				
Descri	ption:	-						=	
Tempe	rature value	e corre	ction for sensor value						
DPT:	Name D	PT_Te	mpHVACRel_Z	DPT ID	205.101	Dat	atype format	$V_{16}Z_{8}$	
Field		Description			Sup.	Range	Unit	Default	
Temperature			Temperature correct	ion value		0	Full Range	K	0
Status								bitset	
- all flags			not supported, fixed	to '0'	NA	]			
Command						М		enum	
_	alWrite								
- all oth	ner commar	nds	not supported			NA			
Comm	unication:								
DP A	ddress:		IO Type(ID):	180 (DHV	VTS)	Prope	-	110	
(in th	e server)		Start-Index:	1		N° of	elements	1	
Prop	erty acces	s:	Read only		Read/W	/rite	$\boxtimes$		
Prote	ection		Read level	-		Write	level	-	
Exception Handling:			Value after Power-up	o: Stored	Value 🛚	Act Va	alue 🔲 Def	ault Value	<u> </u>
Specia	I Features	:			<u> </u>			<u> </u>	
		•							

# 2.6.4.5 Parameter TempCOVCondition

FB:	DHWTS		Prope	erty Name ( <u>Server</u> ):	erty Name (Server): TempCOVCondition						
Desc	ription:	-			•					-	
Delta	temperatu	re '	value 1	for COV condition							
DPT:	Name	DI	PT_Te	mpHVACRel_Z	DPT	ID	205.101	Data	atype format	$V_{16}Z_{8}$	
Field				Description				Sup.	Range	Unit	Default
Temperature				Temperature COV v	alue			0	Full Range	K	0.2
STATUS										Bitset	
- all bits				not supported, fixed to '0'				NA		bool	false
COMMAND									enum		CS
	- NormalWrite						M				
- all o	ther comm	an	ds	not supported				NA			
Comr	nunication	<u> 1:</u>									
DP.	Address:			IO Type(ID):	180 (	DHW	/TS)	Proper	ty ID:	111	
(in t	he server)	)		Start-Index:	1			N° of e	lements	1	
Pro	perty acce	SS	:	Read only			Read/W	rite	$\boxtimes$		
Pro	tection			Read level	-			Write I	evel	_	
Exce	ption Hand	ill	ng:	Value after Power-u	p: Sto	ored '	Value 🛚	Act Va	lue 🔲 Def	ault Value	
Spec	ial Feature	es:									

# 2.6.4.6 Parameter TempAlarmLimitUpper

FB:	DHWTS	Prop	erty Name ( <u>Server</u> ):	TempAlar	mLimitU		latory 🔲			
								Ор	tional 🛚	
Desci	ription:									
Upper	temperatui	e value	for alarm.							
DPT:	Name I	OPT_Te	empHVACAbs_Z	DPT ID	205.100	Data	atype format	$V_{16}Z_{8}$	$V_{16}Z_{8}$	
Field			Description				Range	Unit	Default	
Temperature			Temperature limit val	lue		0	Full Range	°C	cs	
STATUS								Bitset		
- OutofService			limit active / inactive		Ο	true/false		false		
- all other bits			not supported, fixed t	NA		bool	false			
COMMAND							enum		CS	
- Norr	nalWrite					M				
- SetC	SV & Rese	tOSV	Set limit inactive / active							
- all of	ther comma	nds	not supported							
Comr	nunication		-		-		_	-	_	
DP A	Address:		IO Type(ID):	180 (DHV	VTS)	Prope	rty ID:	112		
(in t	he server)		Start-Index:	1		N° of e	elements	1		
Pro	perty acces	s:	Read only		Read/W	/rite	$\boxtimes$			
Prot	ection		Read level	-		Write I	evel	-		
<b>Exception Handling:</b> Value after Power-up: Stored Value Act Value Defau							ault Value	<del>.</del> 🗌		
Speci	al Features	s:								

# 2.6.4.7 Parameter TempAlarmLimitLower

FB: DHWTS Pro	operty Name ( <u>Server</u> ):	erty Name ( <u>Server</u> ): TempAlarmLimitLower							
Description:		-				-			
Lower temperature va	llue for alarm.								
<b>DPT</b> : Name DPT	_TempHVACAbs_Z	DPT ID 20	05.100	Data	atype format	$V_{16}Z_{8}$			
Field	Description		;	Sup.	Range	Unit	Default		
Temperature	Temperature limit va	llue		0	Full Range	°C	cs		
STATUS						Bitset			
- OutofService	limit active / inactive			0	true/false		false		
- all other bits	not supported, fixed	to '0'		NA		bool	false		
COMMAND					enum		CS		
- NormalWrite									
- SetOSV & ResetOS	V Set limit inactive / ac	Set limit inactive / active							
- all other commands	not supported	not supported							
Communication:			<u>-</u>		_	-	-		
DP Address:	IO Type(ID):	180 (DHWTS	S) F	rope	rty ID:	113			
(in the server)	Start-Index:	1	1	√of €	elements	1			
Property access:	Read only	] Re	ead/Writ	e	$\boxtimes$				
Protection	Read level	-	/	Vrite I	evel	-			
<b>Exception Handling:</b>	Value after Power-up	lue 🖂 🗡	Act Va	alue 🔲 Def	ault Value	: 🗌			
Special Features:									

### 2.7 Functional Block Collector Temperature Sensor (COLTS)

### 2.7.1 Functional Specification

The functional block 'Collector Temperature Sensor' measures the flow-temperature from flat plate/tube collector and provides the data to the bus / system.

The distribution of the Collector temperature in the system is event-driven (COV-condition, change of value) and in addition repeated periodically.

Optional feature: The sensor value may be corrected by a parameter value.

#### In the LTE-Mode the COLTS supports LTE DHW zoning,

i.e. separate temperature values form different collectors may be distributed in the system in parallel for different DHW zones.

#### Optional features in LTE Mode:

- Faults in the sensor device may be detected and reported.
- The sensor value may temporary be overridden by means of a tool for service purposes. The 'Overridden' condition must be reported.
- Alarm limits may be detected by the sensor and are reported. The alarm may be acknowledged.
- The sensor may be set / reset out of service by means of a tool for service purposes.

#### Output

- TempCollector This output provides the Collector temperature to the bus.

#### **Parameters**

- TempCorrValue This parameter specifies the correction value for the sensor.

- TempCOVCondition This parameter defines the delta temperature value at

which the information spontaneously is transmitted.

TempAlarmLimitUpper This value can be used to create an alarm.

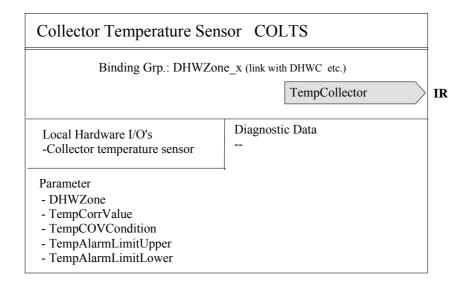
TempAlarmLimitLower This value can be used to create an alarm.

#### 2.7.2 Constraints

This sensor is usually hard wired but also a bus connected remote sensor is possible.

Hot Water Heating

### 2.7.3 Functional block diagram



### 2.7.4 Datapoint description

### **2.7.4.1** Overview

Datapoint	Description	Datapoint Type	DPT N°
Outputs			
TempCollector	Current solar flat plate/tube collector sensor value / LTE and S-interface	DPT_TempHVACAbs DPT_Value_Temp	205.100 9.001
Inputs			
Parameters			
DHWZone	LTE zone: DHW zone number	DPT_UcountValue8_Z	202.002
TempCorrValue	For offset correction of the sensor value	DPT_TempHVACRel_Z	205.101
TempCOVCondition	Value for COV condition	DPT_TempHVACRel_Z	205.101
TempAlarmLimitUpper	Upper alarm limit for generating STATUS 'Alarm'	DPT_TempHVACAbs_Z	205.100
TempAlarmLimitLower	Lower alarm limit for generating STATUS 'Alarm'	DPT_TempHVACAbs_Z	205.100
Diagnostic Data			

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

			STANDARD MODE	Ехте	
		Basic FB	S-Mode	Standard Mode Interface	LTE-Mode
Outputs	TempCollector	$GO_b$	GO	GO	M
Inputs					

Table 16: COLTS Runtime Interworking - dependence on Configuration Modes

		Support
Parameter	DHWZone	M

**Table 17: COLTS LTE specific Properties** 

		Support
Parameter	TempCorrValue	О
	TempCOVCondition	О
	TempAlarmLimitUpper	О
	TempAlarmLimitLower	О
Diagnostic Data		

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

# 2.7.4.2 Output TempCollector

# **Standard Mode:**

DF	Name:	Ten	npColle	ector			Abbr.	:	-	Manda	tory	
FB	Name:	COI	LTS							Can be	interna	al 🔲
De	scription											
Th	is output co	ntaiı	ns the	curren	t solar flat pla	ate/tube co	llector	senso	r value			
Da	tapoint Ty	эе										
DF	PT_Name:	DI	PT_Val	lue_Te	emp							
DPT Format:   F <sub>16</sub>   DPT_ID:   9.001												
Fie	Field Description								Supp.	Range	Unit	Default
										Full	°C	CS
Ac	Access Type											
<b>♦</b>	• Output											
	this $\rightarrow$ M $\square$ this $\rightarrow$ 1 $\square$											
	Spontaneous   COV:   Delta-Value:   2 K 1   MinRepTime:   10sec											
				Cyclic		Period:	15	imin (	recommen	ded value)		
	Request		$\boxtimes$									
Cc	mmunicati	on <sup>-</sup>	Туре									
<b>♦</b>	Group Ob	ject	Datapo	oint						Mandatory	<i>r</i> :   🖂	
	Default Gro	oup A	Addres	s: -								
Dy	namics											
	Power dow	'n:	Save:									
	Power up:		Value	:	No initialisat	ion:		Defa	ult value:			
					Saved value	e:		Actu	al value:		$\boxtimes$	
			Trans	mit on	bus:		$\square$					
Ex	Exception Handling											
Sp	ecial Featu											
1)	1) COV see parameter											

### LTE-HEE Mode:

FB:	COLTS		LTE S	erver Output Name:	TempCol	lector				Mandatory Deficient	
Desc	ription:				_					<u> </u>	tional
		tain	s the o	current solar flat plate/	tube collect	or sens	sor v	/alue			
DPT:				mpHVACAbs Z		205.10		Datatype	format \	/ <sub>16</sub> Z <sub>8</sub>	
Field	11441110			Description	55	Sup.		nge	Unit	COV	Default
Temp	)			collector temperature	value	M	Full Range		°C	2 1)	CS
Statu				standard Status attrib							
- Fau				sensor failure true / fa	alse	M true/false bool			bool	Υ	false
- Out	OfService			void sensor value true	0	tru	e/false	bool	Υ	false	
- Ove	rridden			Sensor is temporarily		0	tru	e/false	bool	Υ	false
				overridden							
- InAl	arm			sensor value alarm tru	0	true	e/false	bool	Υ	false	
- Alar	mUnAck			alarm acknowledgeme	ent status	0	ack	<td>bool</td> <td>Υ</td> <td>unack</td>	bool	Υ	unack
				ack / unack							
- all other flags				not supported			L				
Command				standard Commands,	, Write						
				only		0					
- Override / Release			е		Temporary override / release of						
Cat / Daget OCV/				sensor value		•					
				Set / reset of out of se	ervice	0					
_	-		J.	alarm acknowledge		0					
	ther comm		วร	not supported		NA					
	<u>nunicatio</u>										
	ding Groເ	ıp:		T				ID-6-	.14		
Clas				Туре				Defau	llt		
	eographica										
	plication S	Spe						1			
	nassigned			Broadcast	Configura			1 15		4	
	Address:		1		187 (COLT			roperty ID			45
	-Services	s (ev			/linRepTime		10	0 sec	Hearth	peat:	15 min
ini	oReport		$\boxtimes$	Output per default c	ommunicat	ing	Bi	inding Gro	oup Wildca	ard allow	red 🗌
(L	TE Read-F	Resi	oonse	Tx Prio:	High 🗌			Normal D	7	Low	
	lling of the			TXTTIO.	1 11911 <u></u>			1101111ai E	<u> </u>	LOW	
	all always		.,,	Transm after Power	-up: Stored	Value	П	Act Valu	je ⊠ De	efault Va	ilue 🗆
	pported)				ар. Ото. от						
	perty-Ser	vice	<del>)</del>	Dand only		D = = = 1/1/	\ /: 4 -	. 🔽			
	ividual ad			Read only		Read/V	vrite	$\geq$			
Exce	ption Han	dlin	ıg:						Save a	Powerd	lown
Spec	ial Featur	es:									
<sup>1)</sup> C(	OV see pa	ram	eter								

### 2.7.4.3 Parameter: DHWZone

FB:	COLTS	Pro	ре	erty Name ( <u>Server</u> ):	DHWZo	ne		datory 🖂			
_		<u> </u>								_ U	otional 🗌
	ription:										
LTE z	one: DHW	Zone n	ım	ıber							
DPT:	Name	DPT_U	СО	untValue8_Z DPT ID 202.002 Datatype format \[ \text{L} \]							
Field				Description			S	up.	Range	Unit	Default
CounterValue			n	umber of DHW Zone	•			M	131		1
Status			1							bitset	
- OutOfService			z	one active /inactive				0	true/false		false
- all other flags				ot supported, fixed to	o '0'		1	NΑ			
Command										enum	
- NormalWrite											
- SetC	OSV & Res	etOSV	set zone inactive / active					0			
- all o	ther comm	ands	not supported				1	NA			
Comr	nunicatio	n:								·	<del>-</del>
DP.	Address:			IO Type(ID):	187 (COL	.TS)	Р	rope	rty ID:	101	
(in t	he server	)		Start-Index:	1		N	° of	elements	1	<b>-</b>
Pro	perty acce	ess:		Read only		Read/W	rite	Э	$\boxtimes$		
Pro	tection			Read level			V	/rite	level		
Exce	ption Han	dling:	٧	alue after Powerup:	Stored	Value 🛚	Α	ct Va	alue 🔲 🏻 De	fault Valu	e 🗌
								•			
Spec	ial Feature	es:								<u> </u>	
DHW	DHWTS is not LTE communicating if DHWZone is 'OutOfService'.										

### 2.7.4.4 Parameter TempCorrValue

FB: DHWTS	Proper	ty Name ( <u>Server</u> ):	TempCorrValue	е				datory ☐ tional ⊠	
Description:			-				•		
Temperature value correction for sensor value.									
<b>DPT</b> : Name DF	PT_Ter	npHVACRel_Z	DPT ID 205.	.101	Data	atype format	$V_{16}Z_{8}$		
Field		Description	•		Sup.	Range	Unit	Default	
Temperature	-	Temperature correct	ion value		0	Full Range	K	0	
Status							bitset		
- all flags	!	not supported, fixed	to '0'		NA				
Command							enum		
- NormalWrite	_				M				
- all other command	ds [i	not supported			NA		<u> </u>		
Communication:									
DP Address:		IO Type(ID):	187 (COLTS)		Prope	,	110		
(in the server)		Start-Index:	1		N° of e	elements	1		
Property access	:	Read only	Read	d/Wr	rite	$\boxtimes$			
Protection		Read level	-		Write I	evel	-		
<b>Exception Handlin</b>	Exception Handling: Value after Power-up: Stored Value ☐ Act Value ☐ Default Value ☐								
Special Features:									
					•				

# 2.7.4.5 Parameter TempCOVCondition

FB:	DHWTS	ı	Prope	erty Name ( <u>Server</u> ):	TempCO\	/Condition	on			Mandatory ☐ Optional ⊠	
Desci	ription:				_						
Delta	temperatur	e v	alue 1	for COV condition							
DPT:	DPT: Name DPT_TempHVACRel_Z DPT ID 205.101 Datatype format V						$V_{16}Z_{8}$				
Field				Description			Sup.	Range	Unit	Default	
Temp	erature			Temperature COV v	alue		0	Full Range	K	0.2	
STAT	US								Bitset		
- all b	its			not supported, fixed	to '0'		NA		bool	false	
COMMAND								enum		CS	
	nalWrite						М				
- all o	ther comma	and	ls	not supported			NA				
Comr	nunication	1:									
DP A	Address:			IO Type(ID):	187 (COL	.TS)	Proper	•	111		
(in t	he server)			Start-Index:	1		N° of e	elements	1		
Pro	perty acce	ss:	1	Read only		Read/W	/rite	$\boxtimes$			
Prof	ection			Read level	-		Write I	evel	-		
Exception Handling: Value after Power-up: Stored Value ☐ Act Value ☐ Default Value ☐							: 🔲				
	<u>'</u>			<u>-</u>			·	·	·	<u>'</u>	
Speci	al Feature	s:									
			•			•					

# 2.7.4.6 Parameter TempAlarmLimitUpper

FB:	DHWTS	Prope	erty Name ( <u>Server</u> ):	TempAlar	mLimitU	pper		Mandatory ☐ Optional ☒	
Desci	ription:	•		-					
Upper	temperature	e value	for alarm.						
DPT:	: Name DPT_TempHVACAbs_Z DPT ID 205.100 Datatype format $V_{10}$						$V_{16}Z_{8}$	/ <sub>16</sub> Z <sub>8</sub>	
Field			Description			Sup.	Range	Unit	Default
Temp	erature		Temperature limit va	lue		0	Full Range	°C	cs
STAT								Bitset	
	ofService		limit active / inactive			0	true/false		false
- all other bits			not supported, fixed	NA		bool	false		
COM	MAND						enum		cs
- Norr	nalWrite					M			
	SV & Reset		Set limit inactive / active			0			
- all of	ther comman	nds	not supported			NA			
Comr	nunication:				_				
DP A	Address:		IO Type(ID):	187 (COL	TS)	Proper	ty ID:	112	
(in t	he server)		Start-Index:	1		N° of e	elements	1	
Pro	perty access	s:	Read only		Read/W	rite	$\boxtimes$		
Prot	ection		Read level	-		Write I	evel	-	
Excep	otion Handli	ng:	Value after Power-up	o: Stored \	∕alue ⊠	Act Va	ılue 🗌 🛮 Def	ault Value	
		·						·	·
Speci	al Features	:							
	·		·	·		·			

# 2.7.4.7 Parameter TempAlarmLimitLower

FB:	DHWTS	Prope	erty Name ( <u>Server</u> ): TempAlarmLimitLower							Mandatory Optional	
Descri	ption:	-							-		
Lower	temperatu	re value	for alarm.								
DPT:	Name	DPT_Te	mpHVACAbs_Z	DPT ID	205.100	) [	)ata	type format	$V_{16}Z_{8}$		
Field			Description			Sup	Ο.	Range	Unit	Default	
Tempe	rature		Temperature limit va	lue		0		Full Range	°C	CS	
STATU	JS								Bitset		
- Outof	Service		limit active / inactive			0		true/false		false	
- all oth	ner bits		not supported, fixed	to '0'		NΑ	١		bool	false	
COMM	IAND							enum		cs	
- Norm	alWrite					M					
- SetO	SV & Rese	etOSV	Set limit inactive / ac	tive		Ο					
- all oth	ner comma	ınds	not supported			NΑ	١				
Comm	unication	:			<del>-</del>				=		
DP A	ddress:		IO Type(ID):	187 (COL	TS)	Pro	per	ty ID:	113		
(in th	e server)		Start-Index:	1		N° c	of e	lements	1		
Prop	erty acces	ss:	Read only		Read/W	/rite					
Prote	ection		Read level	-		Writ	te le	evel	-		
Excep	<b>Exception Handling:</b> Value after Power-up: Stored Value ☐ Act Value ☐ Default Value ☐										
Specia	al Features	s:									
					•	•				·	

### 2.8 Functional Block DHW User Settings (UDHWSET)

### 2.8.1 Functional Specification

The functional block 'DHW User Settings' represents the part of an user MMI which provides output signals in order to influence the behaviour of the DHW system according to the needs of the user.

In the LTE-Mode the UDHWSET supports LTE DHW zoning,

i.e. separate DHW user settings form different MMIs may be distributed in the system in parallel for different DHW zones.

The UDHWSET provides information to the DHWSM, DHWC and DHWCPC in the same DHWZone.

#### **Output signals**

- 'DHWModeUser' DHW operating mode ('LegioProtect', 'Normal', 'Reduced' and

'Off/FrostProtect' or AUTO) is provided in order to be able to change the DHW mode in the DHWSM manually. The value of this output has no effect if 'EnableDHWPrep' input in the DHWSM has the value

'disabled'

- 'DHWPushUser' The user can request with this trigger command a DHW "push" in the

DHWSM. This function only makes sense in residential applications where DHW load is controlled individually per apartment or single family home. DHW "push" from different users / apartments in the same

DHWZone is usually not applicable.

The value of this output has no effect if 'EnableDHWPrep' input on the

DHWSM has the value 'disabled'

- 'TempDHWSetpUser' This output can be considered as a remote override of the DHW temp.

setpoint for 'Normal' operating mode in the DHWSM.

In simple systems without DHW scheduler (fixed 'Normal' operating mode DHWModeEff), the user has the possibility for manual adjustment

of the DHW temperature setpoint.

- 'DHWOtherEnergySource' This signal indicates, that another DHW source is active (e.g. electric

DHW load) and that load by the DHWC should be disabled, see chapter

2.3.1.3

- 'DHWCPPush' This signal indicates that the user requests temporary DHW circulation

independent of the actual DHW operating mode. This output is a trigger

which starts circulation pump running for a certain time => to be

contolled by the DHWCPC

#### **Input signals:**

- 'DHWModeUserEff' Resulting user DHW Mode on DHWSM (manual override

'LegioProtect', 'Normal', 'Reduced' and 'Off/FrostProtect' or 'AUTO'

to enable DHW scheduler).

The value of DHWModeUserEff can be the result of the signal DHWModeUser from an MMI (UDHWSET) or the signal

EnableDHWPrep from DHW scheduler (DHWS) or e.g. local settings on

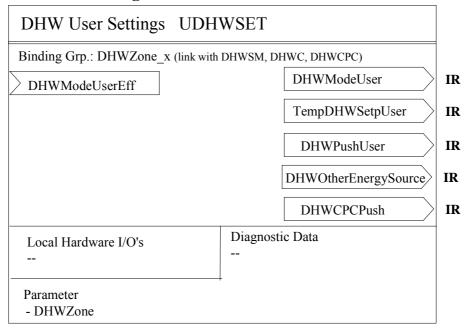
the device containing the DHWSM.

This input signal is used on the MMI (UDHWSET) for immediate feedback about the result of user interaction. DHWModeUser output and DHWModeUserEff input are usually synchronised in a closed loop

### 2.8.2 Constraints

Only one UDHWSET is allowed in one DHWZone

### 2.8.3 Functional block diagram



### 2.8.4 Datapoint description

#### **2.8.4.1** Overview

Datapoint	Description	Datapoint Type	DPT N°
Outputs			
DHWModeUser	DHW operating mode selected by user (manual override) / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
TempDHWSetpUser	DHW temperature setpoint, manually set by user / LTE and S-interface	DPT_TempHVACAbs_Z DPT_Value_Temp	205.100 9.001
DHWPushUser	DHW push command from user MMI	DPT_Trigger	01.017
DHWOtherEnergySource	Information to indicate that another source for DHW load is active => disable load by DHWC	DPT_Bool	1.002
DHWCPPush	DHW circulation pump push command => trigger	DPT_Trigger	01.017
Inputs			
DHWModeUserEff	resulting user DHW operating mode (manual override) from DHWSM; may be used for feedback on the MMI / LTE and S-interface	DPT_DHWMode_Z DPT_DHWMode	201.102 20.103
Parameters			
DHWZone	LTE zone: DHW zone number	DPT_UcountValue8_Z	202.002
Diagnostic Data			

			STANDARD MODE	Ехте			
		Basic FB	Basic FB S-Mode Standard Mode Interface				
Outputs	DHWModeUser	(GO <sub>b</sub> )		(GO)	О		
	TempDHWSetpUser	(GO <sub>b</sub> )		(GO)	О		
	DHWPushUser	(GO <sub>b</sub> )		(GO)	О		
	DHWOtherEnergySource	(GO <sub>b</sub> )		(GO)	О		
	DHWCPPush	(GO <sub>b</sub> )		(GO)	О		
Inputs	DHWModeUserEff	(GO <sub>b</sub> )		(GO)	О		

**Table 19: UDHWSET Runtime Interworking - dependence on Configuration Modes** 

		Support
Parameter	DHWZone	M

**Table 20: UDHWSET LTE specific Properties** 

	Support
Parameter	
Diagnostic Data	

Table 21: UDHWSET Standard Properties of Interface Objects (or memory mapped DP)

# 2.8.4.2 Output DHWModeUser

### **Standard mode:**

DH	Name:	DHWModeUser		Abbr.:			Manda	tory		
E	Name:	UDHWSET	HWSET Can be internal							
De	scription									
			operating mode req							
	DHWMode from the DHW scheduler in the DHWSM if the value of DHWModeUser is ≠ 'AUTO'. See also									
_	apter 2.2.1									
	Datapoint Type									
	PT_Name:	DPT_DHWMod	le			1				
	PT Format:	N <sub>8</sub>				DPT_ID:	20.103			
Fie	eld	Description				Supp.	Range	Unit	Default	
							04		CS	
Ac	cess Type									
<b>♦</b>	Output									
	this $\rightarrow$ M $\square$ this $\rightarrow$ 1 $\boxtimes$									
	Spontaneous   COV:   Δ-Value:   Min repetition period:   0sec 1)									
		Cyclic	: □ <sup>2)</sup> Perio	d: <sup>2)</sup>						
	Request									
Co	mmunicati									
<b>♦</b>		ect Datapoint					Mandatory	<i>'</i> :   🖂		
		oup Address:  -								
Dy	namics		I							
	Power dow									
	Power up:	Value:	No initialisation:			ılt value:				
			Saved value:		ctua	ıl value:		$\boxtimes$		
		Transmit on	bus:							
Ex	ception Ha	ndling								
	ecial Featu									
1) t	<sup>1)</sup> the signal may be sent immediately if the COV is the result of user interaction enabling fast feedback <sup>2)</sup> heartbeat repetition is allowed but an optional feature, the repetition rate is company specific									
			d but an optional fea	ature, the rep	etitio	n rate is c	ompany sp	ecific		
(	recommend	led 15 min)								

### LTE-HEE mode:

FB: UDHWSET	LTE S	Server Output N	lame: DHWMo	odeUse	er			datory ☐ tional ⊠
Description:								
This output contains will override the DH'	WMod	e from the DHW						
'AUTO'. See also ch			DDT ID	204.40	Deteture	formed	1.7	
<b>DPT:</b> Name DP Field		WMode_Z cription	DPT ID	201.10		e format   N   Unit		Default
DHWMode		ial DHW Mode		Sup.	Range	Unit	COV	
		ıaı DHW Mode ıdard Status attril		M	[04]	ļ	<u>'</u>	cs
Status - OutOfService		luaru Status attri I value true / false		0	true/false	hool	Υ	false
- OutOrservice - Overridden		N mode overridd		0	true/false	bool	Ϋ́	false
- all other flags		supported	en nue / laise		li ue/iaise	DOOI	Ī	laise
Command		ndard Commands		<del></del>			<del> </del>	
- Override / Release		nporary override		0				
- Override / Neicasc	_	NMode	/ Telease of					
- Set / Reset OSV		/ reset of out of s	service	0				
- all other command		supported	0011100	NA				
Communication:	<u> </u>			1		<u> </u>	<u> </u>	
Binding Group:								
Class		Туре			Defau	ult		
Geographical								
Application Spec	ific	DHWZone			1			
Unassigned		Broadcast	Configura	ıble 🔲				
DP Address:		IO Type(ID):	181 (UDHV	NSET)	Property ID	): 5	1	
LTE-Services (ev	ent):	COV 🗵	MinRepTime	e:	0 sec <sup>2)</sup>	Hearth	oeat:	<sup>3</sup> ) min
InfoReport	$\boxtimes$	Output per defa	ult communicat	ting	Binding Gro	oun Wilde:	ard allow	red $\square$
(LTE Read-Resp		$\boxtimes$						
polling of the out	put	Tx Prio:	High 🗌		Normal 2	$\leq$	Low	
shall always be supported)		Transm after Po	owerup: Stored	Value	☐ Act Val	ue 🗵 De	efault Va	ılue 🗌
Property-Service (individual acces	s):	Read only		Read/V	Vrite ⊠	1)		
<b>Exception Handlin</b>	g:	-				Save a	t Powerd	lown 🗌
Special Features:								
write access is op	tional;	for Override / Re	elease or Set/R	eset O	SV function o	nly (in pra	ctice usu	ally not
very meaningful for DHWModeUser)								
the signal may be sent immediately if the COV is the result of user interaction enabling fast feedback heartbeat repetition is allowed but an optional feature, the repetition rate is company specific								
		lowed but an opt	tional teature, th	ne repe	tition rate is c	ompany s	pecitic	
(recommended 15	mın)							

# 2.8.4.3 Output TempDHWSetpUser

### **Standard mode:**

DP Name:	<u>TempDHWSetpUse</u>	r Abbr.:			Mandat	tory				
FB Name:	UDHWSET				Can be	interna	al			
Description										
	ntains the actual DH									
This signal is	used in the DHWSM	to generate Templ	DHWSetpSetEf	f.Normal va	alue . See	also cl	napter			
2.2.1										
<b>Datapoint Ty</b>	pe									
DPT_Name:	DPT_Value_Temp									
DPT Format:	10									
Field	d Description Supp. Range Unit Default									
	full range °C cs									
<b>Access Type</b>										
♦ Output										
this $\rightarrow$ M	this	→ 1 🛛								
Spontaneo	us 🛛 COV:	Δ-Value:	0.2 K Mi	n repetition	period:	0sec 2)				
	Cyclic	Period:	3)	•						
Request										
Communicat	ion Type									
♦ Group Ob	ject Datapoint			N	/landatory	<i>r</i> :   🖂				
Default Gr	oup Address:									
Dynamics										
Power dov	/n: Save: ⊠									
Power up:	Value: No	initialisation:		ılt value:						
	Sa	ved value:	<sup>1)</sup> Actua	I value (not	for input)	: X	1)			
	Transmit on bu	s (only for output):	Read	from bus (c	only for in	put):				
<b>Exception Ha</b>	ındling									
Special Feat										
to be saved	at power down if ele	ectronically set. Act	ual value is use	ed in case o	of mechan	ical set	ting			
the signal may be sent immediately if the COV is the result of user interaction enabling fast feedback										
3) heartbeat repetition is allowed but an optional feature, the repetition rate is company specific										
(recommen	ded 15 min)									

### LTE-HEE mode:

FB:	UDHWSET	LTE S	Server Output Name	e: TempD	HWSet	pUse	er			datory 🗌 otional 🖂
Desc	ription:								-	
			ctual DHW setpoint f							
	ignal is used to See also chap		erate TempDHWSetp	oSetEff.Nori	mai vali	ue of	the DHV	WSM in th	e same	DHW
DPT:			npHVACAbs_Z	DPT ID	205.10	0 [	Datatyne	e format	$V_{16}Z_{8}$	
Field	Traine   Di		scription		Sup.			Unit	COV	Default
						0.2				
Status			ndard Status attribut		<u>'''</u>			1	0.2	
	OfService		d value true / false	.03	0	true	/false	bool	Υ	false
	rridden		point overridden true	/ false	Õ		/false	bool	Ϋ́	false
	ther flags		supported	7 10100		ii ac	raise	5001	'	laise
Comn			ndard Commands, W	Vrite only	<del> </del>					
	rride / Release		nporary override / re		0					
0.0			point							
- Set	Reset OSV		/ reset of out of serv	vice	0					
	ther command		supported		NA					
	nunication:	<u>.</u>			<u> </u>	1			<u> </u>	
	ding Group:									
Clas			Туре				Defa	ult		
	eographical		71							
	plication Spec	ific	DHWZone (Link wit	th Controlle	r)		1			
	assigned		Broadcast	Configura						
	Address:		IO Type(ID):	181 (UDH\		Pro	perty ID	): 5	52	
LTE	-Services (eve	ent):		MinRepTime		0	sec 3)	Heart	beat:	<sup>4</sup> ) min
	oReport `	$\boxtimes$	Output per default of			Din	dina Or	\A/:Ida	and allay	ad 🗆
(L	ΓΕ Read-Resp	onse			Ū	BII	iding Gr	oup Wildo	ard allov	ved
	lling of the out	out	Tx Prio:	High 🗌		١	Normal 🏻	$\leq$	Low	
	all always be		Transm after Power	rup: Stored	Value [	∑ <sup>2)</sup> A	Act Valu	e ⊠²) D	efault Va	alue 🗌
	pported) perty-Service			•						
	ividual acces	s):	Read only		Read/V	Vrite	$\boxtimes$	1)		
	otion Handling		-					Save a	t Power	down⊠
Speci	al Features:									
		tional;	for Override / Relea	se or Set/R	eset OS	SV fu	nction o	nly (in pra	ctice us	ually not
ve	ry meaningful 1							<i>y</i> ( )		,
<sup>2)</sup> to b	to be saved at power down it electronically set. Actual value is used in case of infectialical setting									
3) the	signal may be	sent in	nmediately if the CO	V is the res	ult of us	ser in	teraction	n enabling	fast fee	dback
⁴) hea	rtbeat repetition	n is al	lowed but an optiona	al feature, th	ne repe	tition	rate is c	ompany s	specific	
(rec	ommended 15	min)								

# 2.8.4.4 Output DHWPushUser

### **Standard mode:**

DP Name:	DHWPushUser		Abbr.:			Mandat	tory				
FB Name:	UDHWSET	WSET Can be internal									
Description											
DHWPush command requested by a user; for further details see LTE-Mode											
<b>Datapoint Typ</b>											
DPT_Name:	DPT_Trigger										
DPT Format:	B <sub>1</sub>				DPT_ID:	01.017					
Field	Description				Supp.	Range	Unit	Default			
						{0,1} 1)		0			
Access Type											
♦ Output											
$this \to M$		his $\rightarrow$ 1									
Spontaneo	us 🛛 COV:	Δ-Valu	ıe:	Min	repetition	period:	0sec 2)				
	Cyclic Period:										
Request											
Communication Type											
♦ Group Obj	ect Datapoint					Mandatory	r:   🖂				
Default Gro	up Address: -										
Dynamics											
Power dow	n: Save:										
Power up:	Value:	No initialisation:		Defau	ılt value:						
		Saved value:		Actua	l value:						
	Transmit on	bus:									
<b>Exception Ha</b>	ndling										
Special Featu	res										
1) this signal is	transmitted once	if condition for a DI	HW push oc	curs:	the datap	oint value i	s 1 = 'tr	igger'.			
Value = 0 (	'no action') is not	transmitted!									
<sup>2)</sup> the signal ma	ay be sent immed	liately if the COV is	the result of	f user	interactio	n enabling	fast fee	dback			

### LTE-HEE mode:

FB:	UDHWSE	T	TE S	Server Output Name	e: DHWPu	ıshUse	r				datory 🗌 otional 🖂
	ription:	-			-					-	
DHW	storage ta ting mode	nk to	be lo	UDHWSET is used aded once to 'Norma leEff or DHWModeC	al' temperat	ure leve	el, indep	penden	t of the	actual DI	HW
DPT:	Name	DPT	T_Trigger DPT ID 01.017 Datatype format $B_1$								
Field			Des	escription Sup. Range Unit							Default
							$\{0,1\}^{-1}$	_	-	Y 1)	0
Comr	nunicatio	n:									
	ding Grou	p:									
Clas				Туре				Default			
	ographica		<u> </u>								
	plication S	pecifi		DHWZone		····		1			
Unassigned Broadcast Configurable											
	Address:	1	-4\-	IO Type(ID):	181 (UDH\			erty ID:		53	
	-Services	•	nt): 		/linRepTime		0 se	ec ′	Hear	tbeat:	min
	oReport ΓΕ Read-F		_	Output per default communicating Binding Group Wildca						card allow	ved 🗌
	lling of the		ut	Tx Prio: High ☐ Normal ⊠						Low	' 🔲
	all always pported)	be		Transm after Power	Transm after Powerup: Stored Value						
	perty-Serv ividual ac		):	Read only	2)	Read/V	Vrite				
Exce	otion Hand	dling							Save	at Power	down
_	al Feature										
this signal is transmitted once if condition for a DHW push occurs: the datapoint value is 1 = 'trigger'.  Value = 0 ('no action') is not transmitted!  Read access is in principle possible but in practice not useful since the read-back value of this transient DP will always be 0  The signal may be sent immediately if the COV is the result of user interaction enabling fast feedback											
trie	signai may	be s	ent in	imediately if the CO	v is the res	uit oi us	ser mier	action (	enabiln	y iast iee	unack

# 2.8.4.5 Output DHWOtherEnergySource

### **Standard mode:**

FB Name: UDHWSET Can be internal Description  This signal indicates, that the user requests another DHW energy source and that load by the DHWC should be disabled. Example: electric DHW load during summer time  Datapoint Type  DPT_Name: DPT_Bool  DPT_ID: 01.002  Field Description Supp. Range Unit Default false, true false											
This signal indicates, that the user requests another DHW energy source and that load by the DHWC should be disabled. Example: electric DHW load during summer time    Datapoint Type											
should be disabled. Example: electric DHW load during summer time    Datapoint Type											
DPT Format:     B1     DPT_ID:     01.002       Field     Description     Supp.     Range     Unit     Defaul       false, true     false											
Field Description Supp. Range Unit Default false, true											
false, true											
true											
Access Type											
♦ Output											
this $\rightarrow$ M $\square$ this $\rightarrow$ 1 $\square$											
Spontaneous											
Cyclic Period: 60 min											
Request											
Communication Type											
♦ Group Object Datapoint Mandatory:											
Default Group Address:											
Dynamics											
Power down: Save:											
Power up: Value: No initialisation: Default value:											
Saved value: Actual value:											
Transmit on bus:											
Exception Handling											
Special Features											
the signal may be sent immediately if the COV is the result of user interaction enabling fast feedback											

### LTE-HEE mode:

FB:	UDHWSET	LTE S	Server Output e:	DHV	VOther	Energy	/Soi	urce			datory ☐ otional ⊠
Descr	iption:			<del></del>						<del></del>	
			he user requests								HWC in
the sa	me DHWZone	shoul	d be disabled. Ex	ample:	electri	DHW	load	d during s	ummer t	time	
DPT:	PT: Name DPT_Bool DPT ID 01.002 Datatype format B <sub>1</sub>							B <sub>1</sub>			
Field		Des	cription			Sup.	Rai	nge	Unit	COV	Default
							true	e, false	I	Υ	0
Comr	nunication:	_					-			<del></del>	
Bind	ding Group:										
Clas	S		Туре					Defau	ılt		
Ge	ographical										
Ap	plication Spec	ific⊠	DHWZone					1			
Un	assigned		Broadcast	Co	onfigura	ble 🗌					
DP /	Address:		IO Type(ID):	181	(UDHV	VSET)		operty ID	:	54	
LTE	-Services (ev	ent):	COV 🛛								
	oReport ΓE Read-Resp	⊠ onse	Output per defau	Output per default communicating  Binding Group Wildcard allowed							ved
	lling of the outp	put	Tx Prio:	Hi	gh 🗌			Normal [		Low	
	all always be oported)		Transm after Pov	werup:	Stored	Value		Act Val	ue 🗌 🏻 I	Default Va	alue 🗌
	perty-Service ividual access	s):	Read only			Read/V	Vrite				
Excep	tion Handling	g:							Save	at Power	down
	al Features:			_	_				_		
1) the s	signal may be	sent in	nmediately if the C	COV is	the resu	ult of us	er i	nteraction	enablin	g fast fee	dback

# 2.8.4.6 Output DHWCPPush

### **Standard mode:**

DF	Name:	DHV	VCPP	ush					Abbr	:			Mar	ndat	ory		
FB	Name:	UDH	HWSE <sup>*</sup>	T									Can	be	interna	al	
	scription																
Pu	sh comman	d re	queste	ed by	a user	for DI	HW circ	culation	on pun	np; fo	r fu	urther det	ails see	LTE	E-Mode	9	
	tapoint Typ	_															
	PT_Name:		PT_Tri	gger													
DF	PT Format:	B <sub>1</sub>										DPT_ID:	01.0	)17			
Fie	eld	De	escription Supp. Range Unit Defau										ult				
													{0,1}	1)		0	
Ac	cess Type																
•	Output		_		_												
	this $\rightarrow$ M		]		this $\rightarrow$	1											
	Spontaneo	us		CO	V:		Δ-Va	llue:		M	in	repetition	period:	(	0sec <sup>2)</sup>		
	Cyclic Period:																
	Request																
Communication Type																	
•	Group Obj												Manda	tory			
	Default Gro	oup A	Addres	ss:													
Dy	namics																
	Power dow	n:	Save:														
	Power up:		Value	<b>:</b> :		itialisa				_		It value:					
						d valu	ıe:			Act	ua	value:					
				mit o	on bus:												
Ex	ception Ha	ndli	ng														
Sp	ecial Featu	res															
'' t	his signal is											mp push (	occurre	d: th	e data	point	
2)	Value is 1																
<sup>2</sup> / tا	he signal ma	ay b	e sent	imm	ediately	if the	COV i	s the	result	of us	er	interactio	n enabli	ng f	ast fee	dback	(

### LTE-HEE mode:

FB: U	DHWSE	T	TE S	Server Output Name	: DHWCF	Push					datory 🗌	
Descript	ion:	<u> </u>									ntional 🖂	
		al fror	n the	UDHWSET is used	in the DHW	/CPC ir	the sa	me DH\	WZone	and indic	rates that	
				ry DHW circulation in								
				ion pump running for								
				HWCPC) This signal								
<b>DPT:</b> Name DPT Trigger DPT ID 01.017 Datatype format B <sub>1</sub>												
Field	Description Sup. Range Unit								COV	Default		
				•			{0,1} <sup>1)</sup>	·	-	Y 1)	0	
Commu	nicatio	า:				<u> </u>		<u> </u>				
Binding	g Grou	p:										
Class				Туре				Default				
Geog	raphica	l										
Applic	cation S	pecifi	c⊠	DHWZone				1				
Unass	signed			Broadcast	Configura	ıble 🗌						
DP Add	dress:				181 (UDHV	VSET)	Prope	erty ID:		55		
LTE-Se					/linRepTime		0 s	ec 3)	Hear	tbeat:	min	
InfoRe			$\boxtimes$	Output per default communicating  Binding Group Wildcard						eard allow	ved $\square$	
`	Read-R		L									
	g of the		ut	Tx Prio: High ☐ Normal ⊠						Low 🗌		
shall a suppo	always l orted)	be		Transm after Power	up: Stored	Value	□ A	ct Value	e 🗌 🗆	Default Va	alue 🗌	
Proper (individ			=	Read only	2)	Read/V	Vrite					
Exception									Save a	at Power	down	
		<u>J</u>										
Special I	Feature	es:										
1) this sig	nal is tr	ansm	itted	once if condition for	a DHW circ	culation	pump p	oush oc	curs: th	e datapo	int value	
is 1 =	'trigger	'. Valu	ле = (	O ('no action') is not t	ransmitted	!				•		
2) Read a	access	is in p	rincip	olè possible but in pra	actice not u	ıseful si	nce the	read-ba	ack val	ue of this	transient	
DP wi	ill alway	/s be (	0									
³¹ the sigr	nal may	be se	ent im	nmediately if the CO	/ is the res	ult of us	ser inter	action e	enabling	g fast fee	dback	

# 2.8.4.7 Input DHWModeUserEff

### **Standard Mode:**

DP Name:	DHWModeUserEff		Abbr.:			Mandat	ory			
FB Name:	UDHWSET					Can be	internal	$\boxtimes$		
Description										
This input sign	al contains feedback	from the DHWSM	1 concerning	the re	sulting	DHW user	r operati	ng mode		
	ide of DHWMode). DF									
EnableDHWP	rep and possible local	settings on the d	evice conta	ining th	e DHV	VSM. DHW	ModeU:	ser		
output and DHWModeUserEff input on the UDHWSET are usually synchronised in a closed loop (both										
datapoints containing the same value). See also chapter 2.2.1										
Datapoint Type										
DPT_Name:	DPT_DHWMode									
DPT Format:	N <sub>8</sub>			DP	T_ID:	20.103				
Field	Description			Sı	upp.	Range	Unit	Default		
						04		CS		
Access Type										
♦ Input										
N → this		his								
Spontaneo	us 🛛	Cyclically:			Time-	out:	31min			
Request		Polling:			Perio	d:				
Communicati	on Type	<u> </u>								
	ject Datapoint					Mandatory	: 🛛			
	oup Address:									
Dynamics										
Power dow	n: Save:									
Power up:	Value: No i	initialisation:	] De	efault va	alue:					
	Sav	ed value:	1							
		<u> </u>	Re	ead fror	n bus:					
<b>Exception Ha</b>	ndlina									
	<u> </u>									
Special Featu	ires									

### LTE-HEE Mode:

FB:	UDHWSET	LTE C	ClientInput Name:	DHWMoo	deUserE	ff			Mand		
									Op	tional 🛚	
	iption:						_				
			eedback from the DH								
			(manual override of								
			EnableDHWPrep and							he	
			output and DHWMod								
			oop (both datapoints							.1	
DPT:	Name DP	<u>T_DH\</u>	VMode_Z	DPT ID	201.102	2 Da	tatype	format	$N_8Z_8$		
Field			Description					Sup.	Unit	Default	
DHW	Иode		Actual DHW Mode, i	range [04	·]			M	enum.	cs	
Status	3		standard Status attri					M	bitset		
- OutC	OfService		void DHWMode value M bd								
								bool			
Comr	Communication:										
Bind	ling Group:										
Clas			Туре				Defau	lt			
Ge	ographical										
Ap	plication Spec	ific⊠	DHWZone (Controlle	er)			1				
Un	assigned		Broadcast	Configura	able 🗌						
DP /	Address:		IO Type(ID):	176 (DHW	SM)	Prope	erty ID:		56		
LTE	-Service (eve	nt):	InfoReport Sniffer of	on Binding	Group:			-			
Inf	oReport	$\boxtimes$	Timeout:		31	Min					
	-Service (poll ad – Respons		Read Wildcard / Res	sp Sniffer o	on Bindir	ng Gro	up:	-			
			Default Va	alua M			-		Stored Val		
	after Power-	•	Delault Va	alue 🔼			Τ_			ue 📙	
Excep	otion Handling	g:					Sa	ve at Po	werdown		
<del></del>											
	al Features:										
i his ir	nput may be de	evice-ii	nternal								

# 2.8.4.8 Parameter: DHWZone

FB:	UDHWSET	Pro	perty Name ( <u>Server</u> ):	DHWZone						datory 🛚
Desc	ription:			-				•		
LTE z	one: DHW Zo	ne nu	ımber							
DPT:	Name DP	T_Uc	countValue8_Z	DPT ID 202.	.002	Dat	atype form	nat U <sub>8</sub>	$Z_8$	
Field			Description			Sup.	Range	Un	it	Default
Coun	terValue		number of DHW Zone				131			1
Statu	S							bits	et	
	OfService		zone active /inactive				true/false			false
	ther flags		not supported, fixed t		NA					
Comr					М		enu	ım		
	malWrite									
	OSV & ResetO		set zone inactive / ac		0					
	ther command	S	not supported			NA				
	munication:									
	Address:		IO Type(ID):	181 (UDHWSE		<b>.</b>	rty ID:	10	1	<b>-</b>
(in t	he server)		Start-Index:	1		N° of	elements	1		
Pro	perty access:		Read only	Rea	d/Wr					
Pro	tection		Read level			Write	level			
Exce	ption Handlin	g:	Value after Powerup:	Stored Value	e 🛛	Act V	alue 🔲 🔝 l	Defaul	t Valu	e 🗌
Special Features:										
UDH\	NSET is not L	TE co	mmunicating if DHWZ	Zone is 'OutOfSe	ervic	e'				