# Ethernet interface description OPC-UA Thermo-6

## Contents

## 1    Introduction

The information model used in the temperature control unit Thermo-6 for communication via OPC UA corresponds to the officially released standard «EUROMAP 82.1, Version 1.01 = VDMA 40082-1:2020-06».

In the standard «EUROMAP 82.1, Version 1.01 = VDMA 40082-1:2020-06» the standard «EUROMAP 83» is used. Temperature control units Thermo-6 use the information model «EUROMAP 83, Version 1.02».

This overview contains information about the structure of the OPC UA data model, which is implemented in Thermo-6 units from software version SW61-1_2213.

The OPC UA server of the temperature control units Thermo-6 supports all parameters that are defined as «mandatory» and also the optional parameters listed in this document.

In addition to the «EUROMAP 82.1» standard, the data model has been expanded with additional information and functions.

*Note:*

Information on the standardised protocol description Euromap 82.1 Version 1.01 and Euromap 83 Version 1.02 can be found at the following link:

- https://www.euromap.org/euromap82-1
- https://www.euromap.org/euromap83

*Note:*

The basic structure corresponds to the OPC Unified Architecture specification and can be found in the following link:

- https://opcfoundation.org/developer-tools/specifications-unified-architecture

## 2 OPC UA Server Thermo-6

### 2.1 Supported OPC UA Profiles

- http://opcfoundation.org/UAProfile/Server/StandardUA
- http://opcfoundation.org/UAProfile/Server/DataAccess
- http://opcfoundation.org/UAProfile/Server/Methods
- http://opcfoundation.org/UAProfile/Server/NodeManagement
- http://opcfoundation.org/UAProfile/Server/StandardEventSubscription
- http://opcfoundation.org/UA-Profile/PlasticsRubber/TCD/Server/Basic
- http://opcfoundation.org/UA-Profile/PlasticsRubber/TCD/Server/Alarms
- http://opcfoundation.org/UA-Profile/PlasticsRubber/TCD/Server/Maintenance

### 2.2 Supported languages (LocaleIdArray)

According to ISO 639 language codes

| OPC UA LocaleId | Language | OPC UA LocaleId | Language | OPC UA LocaleId | Language |
|---|---|---|---|---|---|
| en | English | es | Spanish | ko | Korean |
| de | German | it | Italian | hr | Croatian |
| fr | French | pl | Polish | et | Estonian |
| nl | Dutch | zh | Chinese | el | Greek |
| da | Danish | ru | Russian | lv | Latvian |
| sv | Swedish | sl | Slovenian | lt | Lithuanian |
| fi | Finnish | pt | Portuguese | tr | Turkish |
| cs | Czech | ro | Romanian | sr | Serbian |
| hu | Hungarian | bg | Bulgarian | | |
| ja | Japanese | sk | Slovakian | | |

### 2.3 General properties

| Property | Limit | Remark |
|---|---|---|
| MaxSessionCount | At least 2 | Maximum number of simultaneously connected clients on the server |
| MaxSessionPerClient | 2 [-] | Maximum number of sessions per client |
| MinSessionTimeout | 10000 [ms] | |
| MaxSessionTimeout | 3600000 [ms] | |
| MinSupportedSampleRate | 100 [ms] | |

# 3 Data model Thermo-6

## 3.1 TCD_InterfaceType (BrowseName: TCD_HB-Therm_xxxx-xxx)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| DisplayLanguage | Profile/Language | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1 DeviceZone

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActiveExternalChannelCount | -- | HB-Therm (→ 3.1.1.1) | SW61-1_2443 | |
| ActualProcessPower | Display/Actual values/Process performance | Euromap 82.1/83 | SW61-1_2213 | |
| ActualPumpPower | Display/Actual values/Pump performance | Euromap 82.1/83 | SW61-1_2213 | |
| ActualPumpSpeedRPM | Display/Actual values/Pump speed | Euromap 82.1/83 | SW61-1_2213 | |
| ActualRegulationRatio | Display/Actual values/Regulation Ratio | Euromap 82.1/83 | SW61-1_2213 | |
| DelayTimeAfterCooling | Setting/Miscellaneous/Waiting time after cooling | Euromap 82.1/83 | SW61-1_2213 | |
| ExternalChannels (Object) | -- | Euromap 82.1/83 (→ 3.1.1.2) | SW61-1_2306 | Only available if Flow-5 is connected |
| ExternalSensor (Object) | -- | Euromap 82.1/83 (→ 3.1.1.3) | SW61-1_2238 | |
| FlowRate (Object) | -- | Euromap 82.1/83 (→ 3.1.1.4) | SW61-1_2213 | |
| FunctionMainLinePressureLimitation | Set values/Flow pressure limiter (function) | HB-Therm (→ 3.1.1.5) | SW61-1_2426 | |
| InternalMeasuringPoint | | Euromap 82.1/83 | SW61-1_2213 | |
| LeakStopper (Object) | -- | Euromap 82.1/83 (→ 3.1.1.6) | SW61-1_2306 | |
| MainLinePressureLimitation | Set values/Flow pressure limiter (set value) | HB-Therm (→ 3.1.1.7) | SW61-1_2426 | |
| MaintenanceInformation (Object) | -- | Euromap 82.1/83 (→ 3.1.1.8) | SW61-1_2213 | |
| MouldEvacuation (Object) | -- | Euromap 82.1/83 (→ 3.1.1.9) | SW61-1_2213 | Only available if the unit includes the 'Mould emptying' function |
| OvertemperatureShutdownDelay | -- | HB-Therm (→ 3.1.1.9.1) | SW61-1_2426 | |
| PositionCoolingValve1 | Display/Actual values/Position cooling valve 1 | HB-Therm (→ 3.1.1.11) | SW61-1_2426 | |
| PositionCoolingValve2 | Display/Actual values/Position cooling valve 2 | HB-Therm (→ 3.1.1.12) | SW61-1_2426 | |
| PressureMainLine | Display/Actual values/Main line pressure | Euromap 82.1/83 | SW61-1_2213 | |
| PressureReturnLine | Display/Actual values/System pressure | Euromap 82.1/83 | SW61-1_2213 | |
| PumpControlMode | Setting/Pump control/Pump operating mode | Euromap 82.1/83 | SW61-1_2213 | |
| PumpSpeed (Object) | -- | Euromap 82.1/83 (→ 3.1.1.13) | SW61-1_2213 | |
| StandbyTemperature | Setting/Miscellaneous/Cooling temperature | Euromap 82.1/83 | SW61-1_2213 | |
| StatusPumpSpeedLimitation | -- | HB-Therm (→ 3.1.1.14) | SW61-1_2426 | |
| SwitchingOffTemperature | Set values/Safety cooling temperature | Euromap 82.1/83 | SW61-1_2213 | |
| Temperature (Object) | -- | Euromap 82.1/83 (→ 3.1.1.15) | SW61-1_2213 | |
| TemperatureDifference (Object) | -- | Euromap 82.1/83 (→ 3.1.1.16) | SW61-1_2213 | |

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| TemperatureLimitation | Set values/Limiting temperature | Euromap 82.1/83 | SW61-1_2213 | |
| TemperatureMainLine | Display/Actual values/Main line | Euromap 82.1/83 | SW61-1_2213 | |
| TemperatureReturnLine | Display/Actual values/Return line | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.1 ActiveExternalChannelCount

Display of the total active external circuits of the Flow-5

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ActiveExternalChannelCount | Byte | 0:PropertyType | O, RO |

### 3.1.1.2 ExternalChannels (Object)

Transmission of the main line temperature per Flow-5, return line temperature, temperature difference, and flow rate values per measurement circuit (sorted from A1..D16).

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ExternalChannel_x | Overview Flow-5 | Euromap 82.1/83 (→ 3.1.1.2.1) | SW61-1_2306 | x → A1..D16 |

### 3.1.1.2.1 ExternalChannel_x (x = A1..D16)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| FlowRate (Object) | -- | Euromap 82.1/83 (→ 3.1.1.2.1.1) | SW61-1_2306 | |
| TemperatureDifference (Object) | -- | Euromap 82.1/83 (→ 3.1.1.2.1.2) | SW61-1_2306 | |
| TemperatureMainLine | Flow-5/Main line x | Euromap 82.1/83 | SW61-1_2306 | x → A..D |
| TemperatureReturnLine | Flow-5/Return line x | Euromap 82.1/83 | SW61-1_2306 | x → A1..D16 |
| Used | Flow-5/Measuring circuit active | HB-Therm (→ 3.1.1.2.1.3) | SW61-1_2426 | |

### 3.1.1.2.1.1 FlowRate (DisplayName: Durchfluss A1..D16)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualValue | Flow-5/Flow rate x | Euromap 82.1/83 | SW61-1_2306 | x → A1..D16 |
| MinValue | Flow-5/Minimal flow rate x | Euromap 82.1/83 | SW61-1_2306 | x → A1..D16 |
| MaxValue | Flow-5/Maximum flow rate x | Euromap 82.1/83 | SW61-1_2306 | x → A1..D16 |

### 3.1.1.2.1.2 TemperatureDifference (DisplayName: Temperaturdifferenz A1..D16)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualValue | Return/Main difference x (Actual value) | Euromap 82.1/83 | SW61-1_2306 | x → A1..D16 |
| MaxValue | Return/Main difference x (Limtit value) | Euromap 82.1/83 | SW61-1_2306 | x → A1..D16 |

### 3.1.1.2.1.3 Used

Display whether Flow-5's external circuits are enabled or disabled.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | Used | Booelan | 0:PropertyType | O, RO |

### 3.1.1.3 ExternalSensor (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualValue | Display/Actual values/External | Euromap 82.1/83 | SW61-1_2306 | |
| AutomaticModeSwitch | Setting/External sensor/Switchover external sensor | Euromap 82.1/83 | SW61-1_2306 | |
| CommunicationProtocolType | Setting/External sensor/Source external sensor | Euromap 82.1/83 | SW61-1_2306 | |
| ExternalSensorModeOff | Functions/External sensor | Euromap 82.1/83 | SW61-1_2306 | |
| ExternalSensorModeOn | Functions/External sensor | Euromap 82.1/83 | SW61-1_2306 | |
| SensorConnected | -- | Euromap 82.1/83 | SW61-1_2306 | |
| ThermocoupleType | Setting/External sensor/External sensor type | Euromap 82.1/83 | SW61-1_2306 | |
| Used | Display/Actual values/External | Euromap 82.1/83 | SW61-1_2306 | |

### 3.1.1.4 FlowRate (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualValue | Display/Actual value/Flow rate | Euromap 82.1/83 | SW61-1_2213 | |
| MaxValue | Monitoring/Flow rate/Maximum flow rate | Euromap 82.1/83 | SW61-1_2213 | |
| MinValue | Monitoring/Flow rate/Minimal flow rate | Euromap 82.1/83 | SW61-1_2213 | |
| SetValue | Set values/Set flow rate | Euromap 82.1/83 | SW61-1_2213 | |
| UpperTolerance | Monitoring/Flow/Upper set/Actual deviation | Euromap 82.1/83 | SW61-1_2213 | |
| LowerTolerance | Monitoring/Flow rate/Lower set/Actual deviation | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.5 FunctionMainLinePressureLimitation

Activates the flow pressure limitation. For more information on flow pressure limitation, https://knowledge.hb-therm.eu/web/latest/thermo-6/en?contentKey=31-020

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | FunctionMainLinePressureLimitation | Booelan | 0:PropertyType | O, RW |

### 3.1.1.6 LeakStopper (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| On | Functions/Leak stopper mode ON | Euromap 82.1/83 | SW61-1_2306 | |
| Off | Functions/Leak stopper mode OFF | Euromap 82.1/83 | SW61-1_2306 | |

### 3.1.1.7 MainLinePressureLimitation

Set value for the flow pressure limitation. For more information on flow pressure limitation, see
https://knowledge.hb-therm.eu/web/latest/thermo-6/en?contentKey=31-020

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | MainLinePressureLimitation | Double | 0:PropertyType | O, RW |

### 3.1.1.8 MaintenanceInformation (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AirReliefValve (Object) | Maintenance Air relief valve | HB-Therm (→ 3.1.1.8.1) | SW61-1_2406 | |
| Cooling (Object) | Maintenance Cooling | Euromap 82.1/83 (→ 3.1.1.8.2 ) | SW61-1_2213 | |
| CoolingWaterFilter (Object) | Maintenance Cooling water filter | HB-Therm (→ 3.1.1.8.3) | SW61-1_2406 | |
| Fan (Object) | Maintenance Fan | HB-Therm (→ 3.1.1.8.4) | SW61-1_2406 | |
| FillingValve (Object) | Maintenance Filling valve | HB-Therm (→ 3.1.1.8.5) | SW61-1_2406 | |
| Heating (Object) | Maintenance Heating | Euromap 82.1/83 (→ 3.1.1.8.6) | SW61-1_2213 | |
| Pump (Object) | Maintenance Pump | Euromap 82.1/83 (→ 3.1.1.8.7) | SW61-1_2213 | |
| ReturnLineFilter (Object) | Maintenance Return line filter | HB-Therm (→ 3.1.1.8.8) | SW61-1_2406 | |

### 3.1.1.8.1 AirReliefValve (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2406 | |
| Interval | Service/Parameter/Maintenance/Valves/Factor switching cycles valves | Euromap 82.1/83 | SW61-1_2406 | |
| RemainingInterval | Display/Actual values/Switching cycles up to maintenance air relief valve | Euromap 82.1/83 | SW61-1_2406 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance air relief valve | Euromap 82.1/83 | SW61-1_2406 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2406 | |
| TotalOperation | Service/Maintenance/Statistic/Air relief switch cycle | Euromap 82.1/83 | SW61-1_2406 | |

### 3.1.1.8.2 Cooling (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2213 | |
| Interval | Service/Parameter/Maintenance/Cooling/Factor cooler time | Euromap 82.1/83 | SW61-1_2213 | |
| RemainingInterval | Display/Actual values/Remaining time cooler maintenance | Euromap 82.1/83 | SW61-1_2213 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance cooler | Euromap 82.1/83 | SW61-1_2213 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2213 | |
| TotalOperation | Service/Maintenance/Operating hours/Operating hours cooler | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.8.3 CoolingWaterFilter (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2406 | |
| Interval | Service/Parameter/Maintenance/Cooling water filter/Factor cooling water filter | Euromap 82.1/83 | SW61-1_2406 | |
| RemainingInterval | Display/Actual values/Remaining time cooling water filter maintenance | Euromap 82.1/83 | SW61-1_2406 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance cooling water filter | Euromap 82.1/83 | SW61-1_2406 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2406 | |
| TotalOperation | -- | Euromap 82.1/83 | SW61-1_2406 | |

### 3.1.1.8.4 Fan (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2406 | |
| Interval | Service/Parameter/Maintenance/Fan/Fan duration factor | Euromap 82.1/83 | SW61-1_2406 | |
| RemainingInterval | Display/Actual values/Remaining time fan maintenance | Euromap 82.1/83 | SW61-1_2406 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance fan | Euromap 82.1/83 | SW61-1_2406 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2406 | |
| TotalOperation | Service/Maintenance/Operating hours/Operating hours fan | Euromap 82.1/83 | SW61-1_2406 | |

### 3.1.1.8.5 FillingValve (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2406 | |
| Interval | Service/Parameter/Maintenance/Valves/Factor switching cycles valves | Euromap 82.1/83 | SW61-1_2406 | |
| RemainingInterval | Display/Actual values/Switch cycle up to maintenance fil valve | Euromap 82.1/83 | SW61-1_2406 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance fill valve | Euromap 82.1/83 | SW61-1_2406 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2406 | |
| TotalOperation | Service/Maintenance/Statistic/Filling switch cycle | Euromap 82.1/83 | SW61-1_2406 | |

### 3.1.1.8.6 Heating (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2213 | |
| Interval | Service/Parameter/Maintenance/Heating/Factor heater time | Euromap 82.1/83 | SW61-1_2213 | |
| RemainingInterval | Display/Actual values/Remaining time until heating maintenance | Euromap 82.1/83 | SW61-1_2213 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance heating | Euromap 82.1/83 | SW61-1_2213 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2213 | |
| TotalOperation | Service/Maintenance/Operating hours/Operating hours heater | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.8.7 Pump (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2213 | |
| Interval | Service/Parameter/Maintenance/Pump/Factor pump time | Euromap 82.1/83 | SW61-1_2213 | |
| RemainingInterval | Display/Actual values/Remaining time pump maintenance | Euromap 82.1/83 | SW61-1_2213 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance pump | Euromap 82.1/83 | SW61-1_2213 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2213 | |
| TotalOperation | Service/Maintenance/Operating hours/Operating hours pump | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.8.8 ReturnLineFilter (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AdditionalInformation | -- | Euromap 82.1/83 | SW61-1_2406 | |
| Interval | Service/Parameter/Maintenance/Return line filter/Limit value factor return filter | Euromap 82.1/83 | SW61-1_2406 | |
| RemainingInterval | Display/Actual values/Remaining time return filter maintenance | Euromap 82.1/83 | SW61-1_2406 | |
| Reset | Service/Maintenance/Reset/Maintenance/Reset maintenance return filter | Euromap 82.1/83 | SW61-1_2406 | |
| Status | -- | Euromap 82.1/83 | SW61-1_2406 | |
| TotalOperation | -- | Euromap 82.1/83 | SW61-1_2406 | |

### 3.1.1.9 MouldEvacuation (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| Mode | - | Euromap 82.1/83 | SW61-1_2509 | |
| MouldEvacuationOnOff | Funktions/ Mould evacuation | HB-Therm (→ 3.1.1.9.1) | SW61-1_2443 | |
| Off | Functions/Mould evacuation | Euromap 82.1/83 | SW61-1_2213 | |
| On | Functions/Mould evacuation | Euromap 82.1/83 | SW61-1_2213 | |
| Sink | Settings/Miscellaneous/Mold emptying with compressed air | Euromap 82.1/83 | SW61-1_2509 | Only available if the device contains the additional equipment ZG. |
| TemperatureLimit | Settings/Miscellaneous/Mould evacuation temperature | Euromap 82.1/83 | SW61-1_2213 | |
| Time | Setting/Miscellaneous/Mould evacuation time | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.9.1 MouldEvacuationOnOff

Switch mould evacuation function on/off.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | MouldEvacuationOnOff | Boolean | 0:PropertyType | O, RW |

### 3.1.1.10 OvertemperatureShutdownDelay

If the «Temperature limit» alarm is active for this set time, an emergency shutdown is performed with alarm «E020.1». The alarm must be acknowledged manually.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | OvertemperatureShutdownDelay | Double | 0:PropertyType | O, RW |

### 3.1.1.11 PositionCoolingValve1

Current position of cooling valve 1

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | PositionCoolingValve1 | Double | 0:PropertyType | O, RO |

### 3.1.1.12 PositionCoolingValve2

Current position of cooling valve 2

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | PositionCoolingValve2 | Double | 0:PropertyType | O, RO |

### 3.1.1.13 PumpSpeed (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualValue | Display/Actual values/Pump output | Euromap 82.1/83 | SW61-1_2213 | |
| SetValue | Set values/Set speed | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.14 StatusPumpSpeedLimitation

Current status of whether the pump speed is limited (e.g. due to flow pressure limitation)

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | StatusPumpSpeedLimitation | Boolean | 0:PropertyType | O, RO |

### 3.1.1.15 Temperature (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualSetValue | Display/Actual values/Set temperature (current) | HB-Therm (→ 3.1.1.15.1) | SW61-1_2406 | |
| ActualValue | -- | Euromap 82.1/83 | SW61-1_2213 | |
| AlarmSuppression | Monitoring/Startup-alarmsuppression | Euromap 82.1/83 | SW61-1_2213 | |
| AutomaticMonitoring | Monitoring/Monitoring type | Euromap 82.1/83 | SW61-1_2213 | |
| ClosedLoopControl (Object) | -- | Euromap 82.1/83 (→ 3.1.1.15.2) | SW61-1_2213 | |
| LowerTolerance | Monitoring/Temperature/Lower set/actual deviation | Euromap 82.1/83 | SW61-1_2213 | |
| MonitoringSensitivity | Monitoring/Monitoring level | Euromap 82.1/83 | SW61-1_2213 | |
| ResetMonitoring | Monitoring/Reset monitoring limits | Euromap 82.1/83 | SW61-1_2213 | |
| SecondSetValue (Object) | -- | HB-Therm (→ 3.1.1.15.3) | SW61-1_2406 | |
| SetRampDown | Set values/Cooling ramp | Euromap 82.1/83 | SW61-1_2213 | |
| SetRampUp | Set values/Heating ramp | Euromap 82.1/83 | SW61-1_2213 | |
| SetValue | Set values/Set temperature 1 | Euromap 82.1/83 | SW61-1_2213 | |
| UpperTolerance | Monitoring/Temperature/Upper set/actual deviation | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.1.15.1 ActualSetValue

Current set value

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ActualSetValue | Double | 0:PropertyType | O, RO |

### 3.1.1.15.2 ClosedLoopControl

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| AutomaticControllerMode | Setting/Temperature control/Auto-tuning | Euromap 82.1/83 | SW61-1_2213 | |
| AutoTuningActive | -- | Euromap 82.1/83 | SW61-1_2213 | |
| AutoTuningOff | Setting/Temperature control/Auto-tuning | Euromap 82.1/83 | SW61-1_2213 | |
| AutoTuningOn | Setting/Temperature control/Auto-tuning | Euromap 82.1/83 | SW61-1_2213 | |
| LowerOutputLimit | Setting/Temperature control/Cooling capacity limitation | HB-Therm ($\to$ 0) | SW61-1_2406 | |
| UpperOutputLimit | Setting/Temperature control/Heating capacity limitation | HB-Therm ($\to$ 3.1.1.15.2.2) | SW61-1_2406 | |

#### 3.1.1.15.2.1 LowerOutputLimit

Limits the maximum controller output for cooling

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | LowerOutputLimit | Byte | 0:PropertyType | O, RW |

#### 3.1.1.15.2.2 UpperOutputLimit

Limits the maximum controller output for heating

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | UpperOutputLimit | Byte | 0:PropertyType | O, RW |

### 3.1.1.15.3 SecondSetValue

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| SetValue2 | Set values/Set temperature 2 | HB-Therm ($\to$ 3.1.1.15.3.1) | SW61-1_2406 | |
| SetValue2Active | -- | HB-Therm ($\to$3.1.1.15.3.2) | SW61-1_2406 | |
| SetValue2Off | Functions/ 2. Set value OFF | HB-Therm ($\to$3.1.1.15.3.3) | SW61-1_2406 | |
| SetValue2On | Functions/ 2. Set value ON | HB-Therm ($\to$3.1.1.15.3.4) | SW61-1_2406 | |

#### 3.1.1.15.3.1 SetValue2

Set temperature 2

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | SetValue2 | Double | 0:PropertyType | O, RO |

#### 3.1.1.15.3.2 SetValue2Active

Defines whether control to 2. Setpoint is active

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | SetValue2Active | Boolean | 0:PropertyType | O, RO |

#### 3.1.1.15.3.3 SetValue2Off

Deactivates control to 2. Setpoint

| Node Class | BrowseName | DataType |
|---|---|---|
| Variable | SetValue2Off | Methode |

#### 3.1.1.15.3.4 SetValue2On

Activates control to 2. Setpoint

| Node Class | BrowseName | DataType |
|---|---|---|
| Variable | SetValue2On | Methode |

### 3.1.1.16   TemperatureDifference (Object)

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActualValue | Display/Actual values/Return/main difference | Euromap 82.1/83 | SW61-1_2213 | |
| MaxValue | Monitoring/Temperature/Return/main difference | Euromap 82.1/83 | SW61-1_2213 | |
| SetValue | Set values/Set temperature difference | Euromap 82.1/83 | SW61-1_2213 | |
| UpperTolerance | Monitoring/Temperature/Set/actual difference deviation | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.2   DisplayLanguage

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| DisplayLanguage | Profile/Language | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.3   Identification

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| DeviceAccessories | Information system/Additional equipment | Euromap 82.1/83 | SW61-1_2213 | |
| DeviceClass | -- | Euromap 82.1/83 | SW61-1_2213 | |
| DeviceManual | -- | Euromap 82.1/83 | SW61-1_2213 | |
| Manufacturer | -- | Euromap 82.1/83 | SW61-1_2213 | |
| ManufacturerUri | -- | Euromap 82.1/83 | SW61-1_2213 | |
| Model | Information system/Type of unit | Euromap 82.1/83 | SW61-1_2213 | |
| SerialNumber | Information system/Unit number | Euromap 82.1/83 | SW61-1_2213 | |
| SoftwareRevision | Information system/Software version | Euromap 82.1/83 | SW61-1_2213 | |
| YearOfConstruction | Service/Configuration/Year of manufacture | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.4   MachineConfiguration

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ExtChannelsAsRemoteDevice | Settings/Remote control/Simulate Flow as a unit | HB-Therm (→ 3.1.4.1) | SW61-1_2428 | |
| LocationName | Display/Unit information/Unit location | Euromap 82.1/83 | SW61-1_2213 | |
| SetMachineTime | Setting/Date/time | Euromap 82.1/83 | SW61-1_2213 | |
| TimeZoneOffset | Setting/Date/time/Time zone | Euromap 82.1/83 | SW61-1_2213 | |
| UserMachineName | Display/Unit information/Unit naming | Euromap 82.1/83 | SW61-1_2213 | |

### 3.1.4.1   ExtChannelsAsRemoteDevice

Aktiviert die Funktion «Flow als Gerät simulieren»

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ExtChannelsAsRemoteDevice | Boolean | 0:PropertyType | O, RW |

### 3.1.5 Operation

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping | Included as of this software | Remark |
|---|---|---|---|---|
| ActiveErrors | -- | Euromap 82.1/83 | SW61-1_2213 | aktuelle anstehende Alarme |
| ActualOperatingMode | -- | HB-Therm (→ 0) | SW61-1_2406 | aktuelle Betriebsart |
| DeviceMappingNumber | Setting/Remote control/Remote control address | Euromap 82.1/83 | SW61-1_2213 | |
| ErrorActive | -- | HB-Therm (→ 3.1.5.2) | SW61-1_2426 | aktuelle anstehende Alarme |
| HighestActiveAlarmSeverity | -- | Euromap 82.1/83 | SW61-1_2213 | |
| HoursOfOperation | Display/Actual values/Operating hours | Euromap 82.1/83 | SW61-1_2213 | |
| IdentifyDevice | -- | Euromap 82.1/83 | SW61-1_2213 | |
| OperatingMode | Current operating mode | Euromap 82.1/83 | SW61-1_2213 | |
| ReactionOnDisconnect | -- | HB-Therm (→ 3.1.5.3) | SW61-1_2509 | |
| ReduceToStandByOff | Functions/Cooling | Euromap 82.1/83 | SW61-1_2213 | |
| ReduceToStandByOn | Functions/Cooling | Euromap 82.1/83 | SW61-1_2213 | |
| ReduceToStandbyOnOff | Functions/Cooling | HB-Therm (→ 0) | SW61-1_2426 | |
| RemoteControlActive | Functions /Remote Control | HB-Therm (→ 3.1.5.5) | SW61-1_2509 | |
| ResetAllErrors | -- | Euromap 82.1/83 | SW61-1_2213 | |
| ResetErrorById | -- | Euromap 82.1/83 | SW61-1_2213 | |
| ResetErrors | -- | HB-Therm (→ 3.1.5.6) | SW61-1_2426 | |
| SessionNameForReactionOnDisconnect | -- | HB-Therm (→ 3.1.5.7) | SW61-1_2443 | |
| SetReactionOnDisconnect | -- | HB-Therm (→ 3.1.5.8) | SW61-1_2443 | |
| StandbyOff | Functions/Standby mode | HB-Therm (→ 3.1.5.9) | SW61-1_2426 | |
| StandbyOn | Functions/Standby mode | HB-Therm (→ 3.1.5.10) | SW61-1_2426 | |
| StateSpecialFillingAfterExternalMouldEvacuation | -- | HB-Therm (→ 3.1.5.11) | SW61-1_2426 | |
| SwitchOff | Unit ON/OFF button | Euromap 82.1/83 | SW61-1_2213 | |
| SwitchOn | Unit ON/OFF button | Euromap 82.1/83 | SW61-1_2213 | |
| SwitchOnOff | Unit ON/OFF button | HB-Therm (→ 0) | SW61-1_2443 | |
| TriggerSpecialFillingAfterExternalMouldEvacuation | -- | HB-Therm (→ 3.1.5.13) | SW61-1_2426 | |

### 3.1.5.1 ActualOperatingMode

Current operating mode of the temperature control unit

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ActualOperatingMode | ActualOperatingModeEnum | HB-Therm | O, RO |

ActualOperatingModeEnum:

| Name | Value | Description |
|---|---|---|
| UNDEFINED | 0 | Operating mode undefined |
| READY_TO_OPERATE | 1 | Ready for operation |
| NORMAL_OPERATION | 2 | Normal operation |
| ECO_AUTO | 3 | Eco-mode Auto |
| ECO_TEMP | 4 | Eco-mode Temp |
| ECO_FLOW | 5 | Eco-mode Flow |
| ECO_SPEED | 6 | Eco-mode Speed |
| BOOST | 7 | Boost-mode |
| COOLING | 8 | Cooling |
| MOULD_EVACUATION | 9 | Mould evacuation |
| SAFETY_COOLING | 10 | Safety cooling |
| PRESSURE_RELIEF | 11 | Pressure relief |
| LEAK_STOPPER | 12 | Leakstop mode |
| SERVICE | 13 | Service mode |
| EMERENCY_SHUTDOWN | 14 | Safety switch-off in case of voltage interruption |
| DEMO | 15 | Demo mode |
| STANDBY | 16 | Standby mode |

*Table 1: ActualOperatingModeEnum*

### 3.1.5.2 ErrorActive

All active alarms are listed as an alarm code. If several alarms are active at the same time, they are separated by a semicolon.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ErrorActive | String | 0:PropertyType | O, RO |

### 3.1.5.3 ReactionOnDisconnect

Defines the reaction of the temperature control unit if the connection is lost due to a session timeout (connection interruption). For more information on the function, see standard Euromap 82.2

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ReactionOnDisconnect | UInt16 | 0:MultiStateValueDiscreteType | O, RO |

ReactionOnDisconnect:

| Name | Value | Beschreibung |
|---|---|---|
| NO_REACTION | 0 | no reaction |
| SWITCH_OFF | 1 | Cool to safety shutdown temperature and turn off |
| COOLING_AND_SWITCH_OFF | 2 | Cool to cooling temperature and switch off |

### 3.1.5.4 ReduceToStandbyOnOff

Activate/Deactivate the cooling function

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ReduceToStandbyOnOff | Boolean | 0:PropertyType | O, RW |

### 3.1.5.5 RemoteControlActive

Remote control operation function active/inactive

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | RemoteControlActive | Boolean | 0:PropertyType | O, R |

### 3.1.5.6 ResetErrors

Acknowledge all error messages. After all alarms have been acknowledged, «ResetErrors» is automatically set to «false» again.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | ResetErrors | Boolean | 0:PropertyType | O, RW |

### 3.1.5.7 SessionNameForReactionOnDisconnect

Displays the name of the session that called the «SetReactionOnDisconnect» method. For more information on this variable, see standard Euromap 82.2

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | SessionNameForReactionOnDisconnect | String | 0:PropertyType | O, RO |

### 3.1.5.8 SetReactionOnDisconnect

Defines the reaction of the temperature control unit if the connection is lost due to a session timeout (connection interruption). For more information on the function, see standard Euromap 82.2

| Node Class | BrowseName | DataType |
|---|---|---|
| Variable | SetReactionOnDisconnect | Methode |

### 3.1.5.9 StandbyOff

Activate the standby mode function. For more information on standby mode, see https://knowledge.hb-therm.eu/web/latest/thermo-6/en?contentKey=31-035

| Node Class | BrowseName | DataType |
|---|---|---|
| Variable | StandbyOff | Methode |

### 3.1.5.10 StandbyOn

Deactivate the standby mode function. For more information on standby mode, see https://knowledge.hb-therm.eu/web/latest/thermo-6/en?contentKey=31-035

| Node Class | BrowseName | DataType |
|---|---|---|
| Variable | StandbyOn | Methode |

### 3.1.5.11 StateSpecialFillingAfterExternalMouldEvacuation

Status of whether a special filling process is carried out when the unit is started. After the special filling process has been carried out, «StateSpecialFillingAfterExternalMouldEvacuation» is automatically set to «false» again.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | StateSpecialFillingAfterExternalMouldEvacuation | Boolean | 0:PropertyType | O, RO |

### 3.1.5.12 SwitchOnOff

Function Switch device on/off.

| Node Class | BrowseName | DataType | TypeDefinition | Other |
|---|---|---|---|---|
| Variable | SwitchOnOff | Boolean | 0:PropertyType | O, RW |

### 3.1.5.13 TriggerSpecialFillingAfterExternalMouldEvacuation

This method can be used to inform the Thermo-6 that the mould circuit has been blown out with compressed air by an external setup. The next time the unit is started, a special filling process is carried out.

| Node Class | BrowseName | DataType |
|---|---|---|
| Variable | TriggerSpecialFillingAfterExternalMouldEvacuation | Methode |

### 3.1.6 TCDSpecification

| BrowseName / DisplayName | Thermo-6 parameters | Namespace mapping / (Kapitel EM) | Included as of this software | Remark |
|---|---|---|---|---|
| ConnectedLoad | Service/Configuration/Connected load | Euromap 82.1/83 | SW61-1_2213 | |
| CoolingCapacity | Service/Configuration/Cooling capacity | Euromap 82.1/83 | SW61-1_2213 | |
| MaxTemperature | Service/Configuration/Limit temperature | Euromap 82.1/83 | SW61-1_2213 | |
| NominalFlowRate | Service/Calibrating/Flow rate/Flow rate maximum | Euromap 82.1/83 | SW61-1_2213 | |
| PowerValue | Service/Configuration/Heating capacity | Euromap 82.1/83 | SW61-1_2213 | |