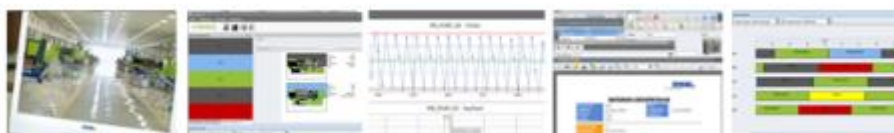


# Guide for Data interfaces

**Version: 20240719**



# data interfaces - content

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# 1. Available data interfaces for ENGEL-machines

For the communication with ENGEL machines three interfaces are available:

- EUROMAP 63 according to Euromap
- OPC-DA
- EUROMAP 77 according to Euromap

Details about the availability of the interfaces on the different machine and robot controllers are mentioned in the following table:

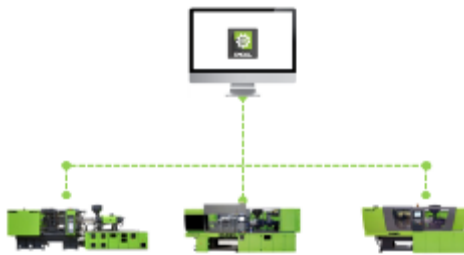
	Euromap 63	OPC-DA	Euromap 77
<b>Machines</b>			
EC88-A02	✓	✗	✗
CC90-A02	✓	✗	✗
EC/CC100 A01	✓	✗	✗
EC/CC100 A02	✓	✗	✗
EC/CC100 A03	✓	✗	✗
EC/CC200	✓	✓	✗
LC200	✓	✗	✗
CC300	✓	✗	✓
<b>Robots</b>			
RC100 standalone	✓	✗	✗
RC200 standalone	✓	✓	✗
RC300 standalone	✓	✗	✗

You can find the details for the different interfaces in the following chapters.

## 2. Euromap 63

### 2.1. Set-up of Euromap63

- Alternative 1: host



required modules:

„Machine License for Euromap63“

PLE 1001810

The needed software for the PC or server will be provided by the service after buying the machine license.

Old machines (controller type CC100 and older) additionally need a retrofit for an ethernet interface.

- Alternative 2: Industrial PC with data interface Euromap 63



The industrial PC is included in the machine cabinet and it is necessary once per machine:

required modules:

- Industrial-PC with Data Interface Euromap 63 consisting of:
  - IPC
  - Software “Data Interface Euromap 63”
  - Machine License for Euromap63 or OPC

PLE 1001811 (for CC300)

PLE 1001812 (for controls older than CC300 – only retrofit)

### 2.2. Functional survey

#### 2.2.1. Functions

- SET  
The keyword SET is used to set a variable in the injection moulding machine.
- REPORT  
The command creates an application data report of the requested parameters.
- DOWNLOAD / UPLOAD (Part data sets)  
Download is defined as direction host to machine. Upload is defined machine to host.  
The Download command is used to download a data set to a specific machine.  
Upload command is used to upload a data set from a specific machine and store it to a file.
- EVENT CURRENT\_ALARMS  
The command provides alarms which are currently active.

- **EVENT ALARMS**  
With the keyword EVENT it is possible to start a log request. The event type ALARMS delivers the historical alarm logging from the FIFO-memory of a machine. (it is possible to read them only once, afterwards the memory will be deleted)
- **EVENT CHANGES**  
The changes event type is used to log machine setup parameter changes as entered by the machine operator.
- **GETID**  
This command is used to get all available variables from a machine and stores it to the defined response file.
- **GETINFO**  
The keyword GETINFO is indicating an upload of a hard and software information of a machine.

## 2.2.2. Availability of commands

		SET	REPORT	DOWNLOAD/ UPLOAD	EVENT CURRENT_ALARMS	EVENT ALARMS	EVENT CHANGES	GETID	GETINFO
machines	EC88-A02	✓	✓	✗ <sup>°)</sup>	✓	✗	✗	✓	✓
	CC90-A02	✓	✓	✗ <sup>°)</sup>	✓	✗	✗	✓	✓
	EC/CC100 A01	✓	✓	✗ <sup>°)</sup>	✓	✗	✗	✓	✓
	EC/CC100 A02	✓	✓	✓	✓	✓	✓	✓	✓
	EC/CC100 A03	✓	✓	✓	✓	✓	✓	✓	✓
	EC/CC200	✓	✓	✓	✓	✓	✓	✓	✓
	LC200	✓	✓	✓	✓	✓	✓	✓	✓
	CC300	✓	✓	✓	✓	✓	✓	✓	✓
robots	RC100 standalone	✓	✓	✓	✓	✓	✓	✓	✓
	RC200 standalone	✓	✓	✓	✓	✓	✓	✓	✓
	RC300 standalone	✓	✓	✓	✓	✓	✓	✓	✓

<sup>°)</sup> The dataset is only limited and inconsistent transferable. Settings of included robots are not available on those machines.

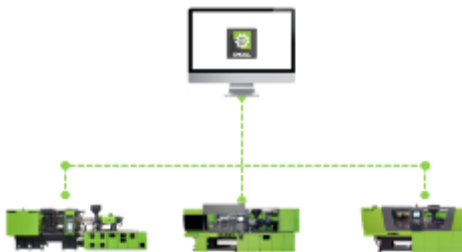
### 2.2.3. Machine screen pages

Different MES providers have different special options for machine screen page to be able to interact with the MES system. Such screen pages are normally used for example to request an order or a part data set from the MES directly on the machine. Of course, these screen pages work only in combination with the correct MES system, which requested the screen page. Details for these screen pages can be requested from your local subsidiary or from the spare parts department.

## 3. OPC-DA

The standard OPC-DA is only available for machines or robots with control EC/CC200 or RC200 standalone.

### 3.1. Installation OPC-DA



required modules:

„Machine License for Euromap 63 and OPC “  
(only retrofit)

### 3.2. Functional overview

- Read and write system variables
- Reading the attributes of system variables

#### 3.2.1. Extension options:

The following functions are not included in the standard OPC-DA 2.0 specification but can be developed individually.

- Reading and clearing actual Alarms
- Managing users and their rights
- Reading of system events
- Read and write part data sets

## 4. Euromap 77

Euromap 77 is based on OPC UA and only available **for machines with CC300 control**.  
The Euromap 77 was defined for data exchange between injection moulding machines and MES.  
The specification from Euromap is available online at <http://www.euromap.org/en/euromap77/>

### 4.1. Installation Euromap 77



#### required modules:

“Data Interface for MES based on Euromap 77”  
(integrated in the control of the machine)  
PLE 1016908

### 4.2. Functional overview

The following functions are defined in Euromap 77:

- **Euromap 77 Basic**  
Support of IMM\_MES\_InterfaceType and all mandatory child elements giving information on the injection moulding machine itself, the current configuration and status and the installed injection units, mould and power units.
- **Euromap 77 Jobs**  
Support of JobsType (defined in EUROMAP 83) for the status and management of status as well as providing cycle parameters
- **Euromap 77 ProductionDatasetManagement**  
Support of ProductionDatasetManagementType (defined in EUROMAP 83) for the management and transfer of datasets between MES and IMM

(source: EUROMAP 77 specification, page 5)

### 4.3. User information

For detailed information a separated user information is available.  
Please download from [www.engelglobal.com/en/at/documentation.html](http://www.engelglobal.com/en/at/documentation.html)



## 5. ENGEL machine parameters

Like mentioned above, for the communication with an ENGEL machine the interfaces Euromap63, the standard OPC-DA and Euromap 77 are available. Different functions can be executed with these interfaces. These functions can be divided into the following categories:

- Read/write of single parameters
- Read/write of part data (also known as tool data or recipes). This data is not transparent and visible as an enclosed data packet (like a configuration file). ENGEL provides on request a product for decrypting the data (.NET partdata-DLL).
- Read set value changes and historical alarms
- Read the latest alarms

The following chapters are dedicated to the Topic “read and write single parameters”. The main difficulty here is how the user gets the specific parameter description with one of the three interfaces mentioned above.

## 6. Parameter description

Only in one of the public interfaces (Euromap63) are the parameter descriptions standardised. These standardised parameters are for the most part optional and because of that they can be defined with manufacture specific descriptions.

Here an example from the specification:

Token	Req	Format	Units	Notes
SetTmpOil	No	NUMERIC	Celsius	Oil Set Temperature
ActTmpWtrIn	No	NUMERIC	Celsius	Water Intake Actual Temperature
ActTmpWtrOut	No	NUMERIC	Celsius	Water Outlet Actual Temperature
ActTmpCab	No	NUMERIC	Celsius	Cabinet Actual Temperature
ActTmpMlt	No	NUMERIC	Celsius	Melt Actual Temperature

<http://www.euromap.org/files/eu63.pdf>

These standardised parameters can be used by all ENGEL machine control panels (CC100, CC200 and CC300) as well as with machines from other manufactures (KM, ARBURG etc.). For different reasons, there are just a portion of the Euromap63 standard parameter descriptions available for the ENGEL control panels. Due to that, the user often has to deal with the specific parameter descriptions for the respective control panel generation. According to the respective software architecture of the control panel generation, there are different parameter description types available. Below is an example for the mould opening position:

- CC100: @2000
- CC200: @Mold1.sv\_rMldOpenPos
- CC300: @cc300://imm/cm#//c.Mold1/p.sv\_rMldOpenPos/v

The descriptions for the parameters on the CC100 are between 0 and 65535.

The descriptions for the parameters on the CC200 result from the underlying SPS programming language.

The descriptions for the parameters on the CC300 result from the so-called component model. This model is an additive abstraction level to the SPS programming language.

The @ sign is Euromap63 standard and must be put in front of the non-standardised parameter descriptions.

## 6.1. Parameter description on OPC DA

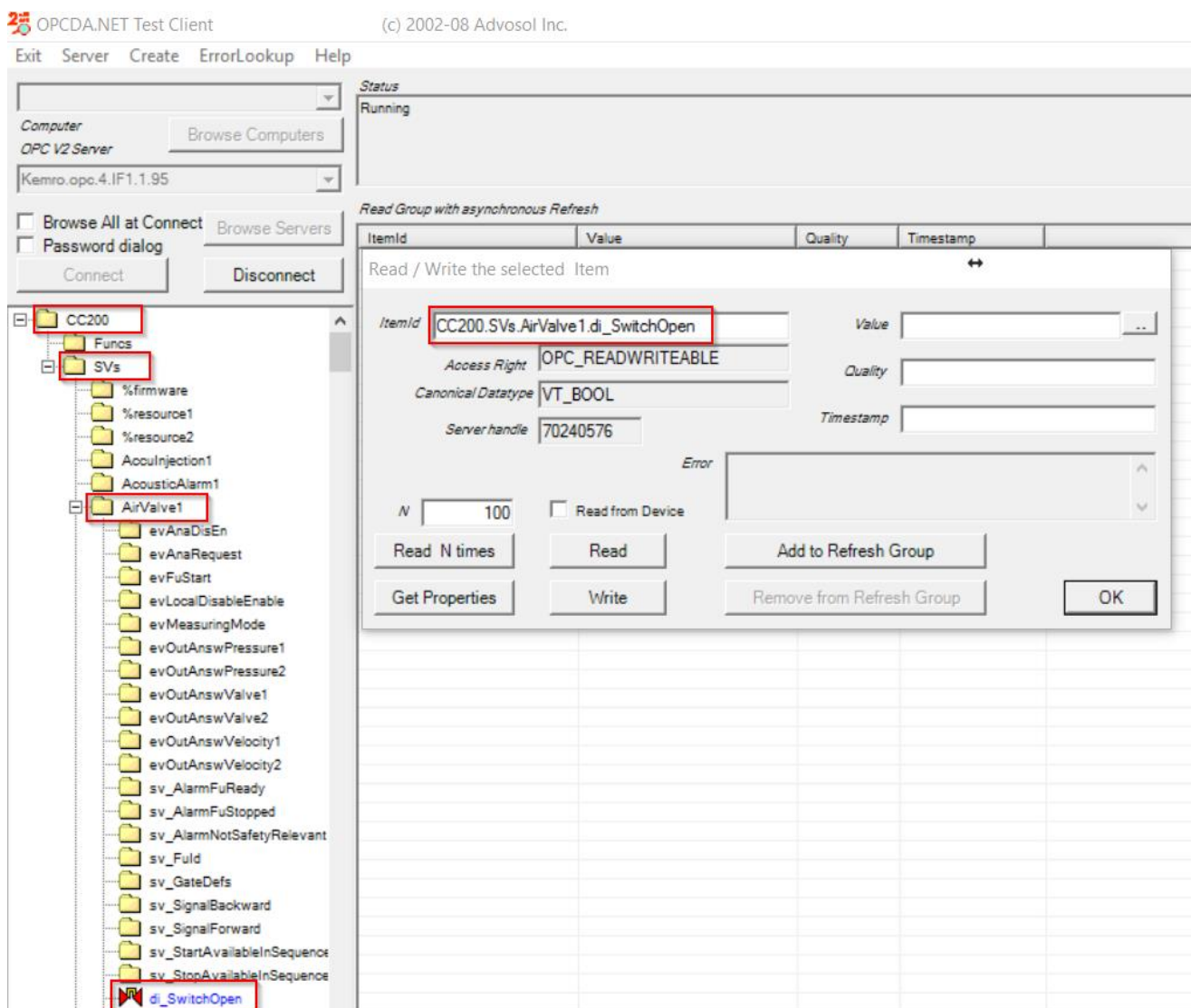
With OPC DA, the same parameter descriptions as with Euromap63 will be used. However, the machine connection path from the respective customer installation must be set in front of the parameter description.

The following example shows the OpcSvc.ini" configuration file of the OPC server installation folder with a test machine with the name "CC200".

```
[DefaultHosts]
CC200          = 127.0.0.1
```

In this case the parameter description **AirValve1.di\_SwitchOpen** gets changed to **CC200.SVs.AirValve1.di\_SwitchOpen**

Below is an example of a standard OPC DA client:



## 6.2. Parameter description on EMI

The parameter IDs from the component model of the CC300 controller are used for the EMI interface. This means that the same designations are used as for Euromap63, only without the @ sign at the beginning.

E.g.

cc300://system/cm#/c.SystemState/p.currentSystemState/v

## 6.3. Special parameters for compatibility with CC100 parameters

Since almost only absolute parameter values are managed internally in the CC200, a mapping has been created for compatibility with the CC100, which makes a not inconsiderable amount of these parameters accessible to the CC200 as CC100 parameters.

The realization takes place via a special interface between the Euromap 63 module and the machine control.

A special feature is that in the GETID file there is no equivalent for these parameters as a "real" CC200 parameter name. The reason for this is that there is actually no variable in the control for this parameter, and instead a conversion formula is used at the moment the parameter is queried by the machine.

The following example from a GETID file shows that the parameter @22246 points to @WeekTimer.sv\_bDevice2On. In contrast, the parameter @2009 stands alone because the value is calculated only on the basis of a formula.

In the global mapping file ems2C2k.txt in the directory "..system\access\" of the E63 installation, these parameters can be recognized by this mapping:

2009=sps.SVs.Special...

**Note:** Due to the special nature of the value determination of the parameters, an absolute time synchronization with the parameters from the process data buffer cannot be ensured!

```
@22236, B, 1, 0, 1, , "Gerät 2 ausschalten mit Wochenschaltuhr"
@WeekTimer.sv_bWeekTimerDevice2Off, B, 1, 0, 1, , "Gerät 2 ausschalten mit Wochenschaltuhr"
@22245, B, 1, 0, 1, , "Gerät 1 Hauptschalter"
@WeekTimer.sv_bDevice1On, B, 1, 0, 1, , "Gerät 1 Hauptschalter"
@22246, B, 1, 0, 1, , "Gerät 1 Hauptschalter"
@WeekTimer.sv_bDevice2On, B, 1, 0, 1, , "Gerät 1 Hauptschalter"
@02004, N, 2, 1, 1, "Stroke", "pos w1-start 3rd closing speed"
@2004, N, 2, 1, 1, "Stroke", "pos w1-start 3rd closing speed"
@02005, N, 2, 1, 1, "Stroke", "pos w2-start 3rd opening speed"
@2005, N, 2, 1, 1, "Stroke", "pos w2-start 3rd opening speed"
@02006, N, 2, 1, 1, "Stroke", "pos w3-start 2nd closing speed"
@2006, N, 2, 1, 1, "Stroke", "pos w3-start 2nd closing speed"
@02007, N, 2, 1, 1, "Stroke", "pos w4-start 2nd opening speed"
@2007, N, 2, 1, 1, "Stroke", "pos w4-start 2nd opening speed"
@02009, N, 2, 1, 1, "Stroke", "pos g2-mould protection end screen value"
@2009, N, 2, 1, 1, "Stroke", "pos g2-mould protection end screen value"
@02010, N, 2, 1, 1, "Stroke", "pos b-mould closed"
@2010, N, 2, 1, 1, "Stroke", "pos b-mould closed"
@02100, N, 2, 1, 1, "Stroke", "metering stroke"
@2100, N, 2, 1, 1, "Stroke", "metering stroke"
```

## 6.4. Parameters are machine dependent

Nearly each ENGEL machine is an individual, also in terms of its overall parameters. In this chapter, we want to point out that not every machine has all parameters. It depends always on the type, the special options and the equipment of the machine. Here are some examples:

- Machines with one injection unit vs. machines with multiple injection units  
Parameters of the second injection unit will not be available on a machine, which only has one injection unit.
- Electrical vs. hydraulic machines  
A fully electrical machine has for example no oil temperature. The oil temperature is only available if there is a hydraulic component on the machine.

## 7. Visibility of the parameters

In the ENGEL machine control a high number of parameters are available because they are required for the SPS programming. However, most of the time it's not practical to set all the parameters on the respective interface to visible.

### 7.1. Visibility CC100 Euromap63

The visibility of the parameters depends only on the machine programming of the CC100 controller. If there are parameters necessary which are not set to visible, a change in the software of the CC100 controller is necessary.

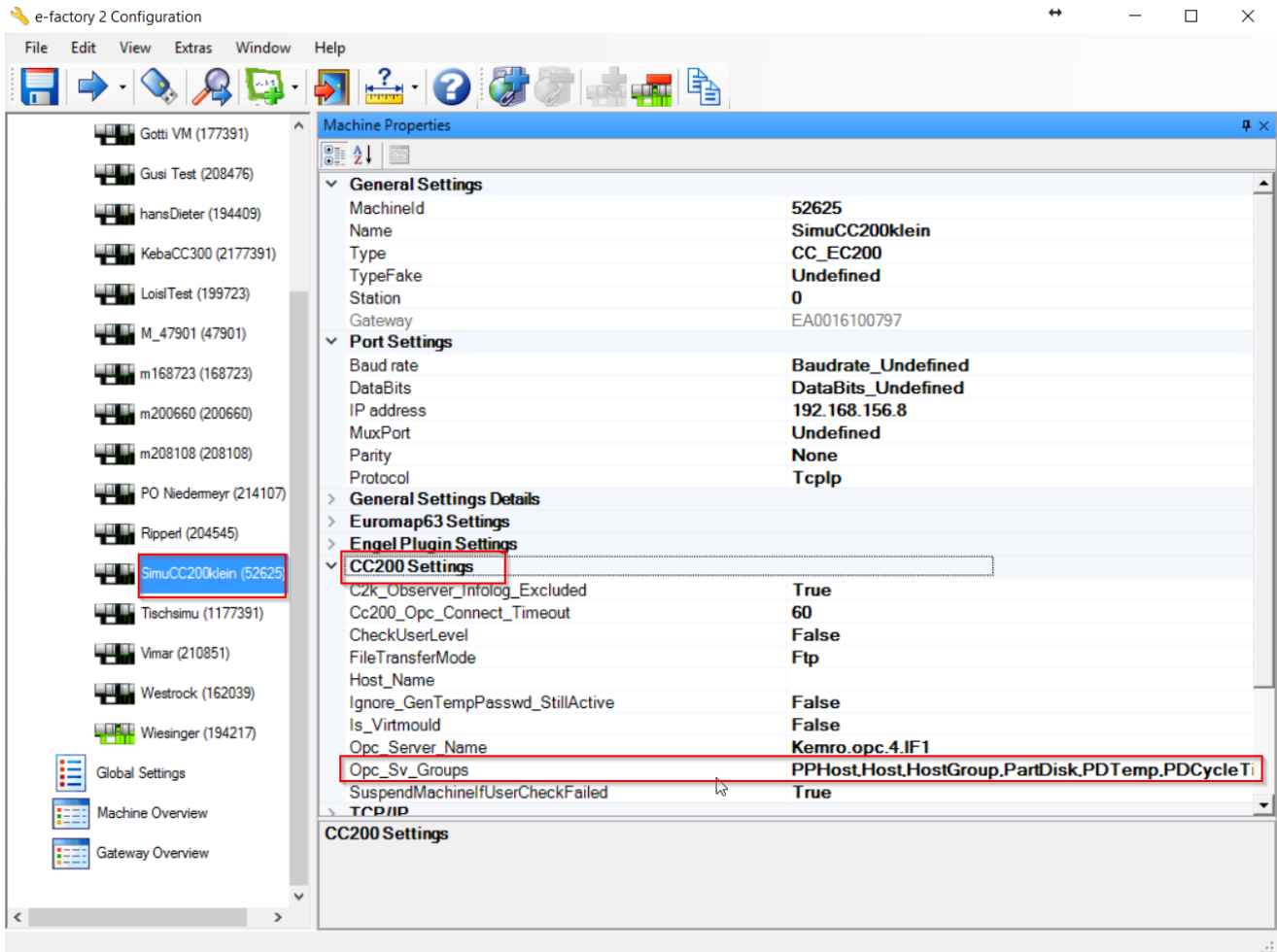
### 7.2. Visibility CC200 Euromap63

The visibility of the parameters depends on the machine programming of the CC200 controller as well as of the configuration of the Euromap63 system. All the parameters on a CC200 control are assigned to so called parameter groups. In the standard configuration the most important groups are set to visible. If necessary, parameters can be set to visible even though they are not assigned to a group. The syntax in that configuration field looks like this:

**ParGroup1, ParGroup2, ... (ParNam1|ParName2...)**

The name of the parameter must not include the @ sign from the Euromap63 specification.

- PPHost
- Host
- HostGroup
- PartDisk
- PDTemp
- PDCycleTime
- PDProcess
- PDMachine
- PDProduction
- PDFlomo1



## 7.3. Visibility CC200 OPC DA

The behaviour and the configuration of the visibility is on the OPC DA interface almost the same as on the Euromap63 interface, the only difference is the way the configuration is saved. In the installation path of the OPC DA interface (e.g. c:/Kemro/opc.1.95) there is a file called OpcSvc.ini. The configuration string for every machine can be set to this file.

The general syntax reads as follows:

MachineName = Ip-Address [,ConfigString]

ConfigString = \*

ConfigString = ParGroup1, ParGroup2..., (ParNam1|ParName2...)

- 1) The configuration string is optional. If the string is not existing, all the parameters of the control are available. Therefore, there is no filter. (Not recommended due to the high number of parameters of the CC200 controller)
- 2) If the configuration string looks like this: "ConfigString = \*", all parameters which are assigned to a parameter group are available.
- 3) If the configuration string is a combination of parameters and parameter groups, all declared parameters are available.

## Example:

[DefaultHosts]

Machine1 = 192.168.156.1

Machine2 = 192.168.156.1, \*

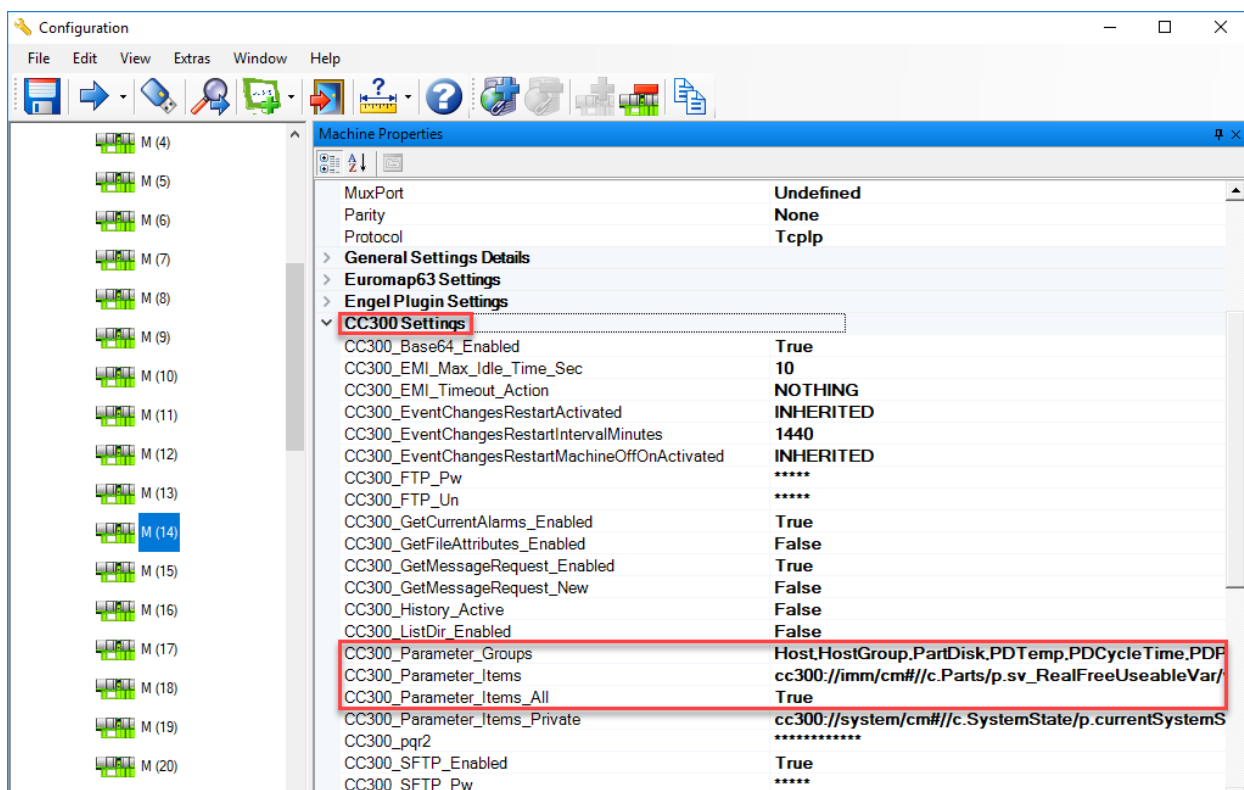
Machine3 = 192.168.156.1, PPHost, Host, HostGroup, PartDisk, PDCycleTime, (Maintenance.sv\_iOperationHour1 | Maintenance.sv\_iOperationHour2)

## 7.4. Visibility CC300 Euromap63

The behaviour of the visibility on the CC300 control is the same as on the CC200 control. The difference lies in the configuration field and in a small syntax change.

There are two configuration fields for the CC300:

- CC300\_Parameter\_Groups: Contains the visible groups, separated by a comma.
- CC300\_Parameter\_Items: Contains the visible parameters, separated by a comma  
A wildcard \* can, for example, make several parameters of the same name visible. This means that e.g. by adding "cc300://imm/cm#//c.InjectionUnit1/\*" to this field, all parameters of the injection unit 1 can be made visible.
- CC300\_Parameter\_All: When activated, all available parameters of the control are switched visible (due to the large number of parameters of a CC300 control, the preferred solution is the individual visible switching of groups and parameters).



## 8. Absolute and relative values

In the world of injection moulding machines, a distinction is made between absolute and relative values of machine parameters. Relative values are set in relation to a constant machine parameter, for example the screw diameter. A parameter like dosing volume (cm<sup>3</sup>) would be referred to the relative parameter dosing path and would have the unit mm. However, there are also other variants which are not explained further here. The ENGEL machine controllers now support absolute and relative values as follows:

- CC100: Works per default with relative values. Optionally, injection-side values can additionally also be presented as absolute values.
- CC200: Operates in the range of the part data (set value) exclusively with absolute values ("specific values"). Actual process values can be queried as relative and, in some cases, also as absolute values. Details can be found in the parameter lists.
- CC300: Basically, only supplies absolute values.

The machine visualizations of the CC200 and CC300 can switch between absolute and relative values. This ability is not available at the interface level (of Euromap63) and often leads to misunderstandings.

### 8.1. Hydraulic vs. specific pressures

This chapter shows the differences of relative and absolute parameters on the different controller types by the example of the hydraulic and the specific pressures and the differences of these parameters for electrical and hydraulic machines.

We want to show the differences on the following parameters:

- Hydraulic back pressure peak value (relative value) and
- Specific back pressure peak value (absolute value)

A hydraulic CC200 machine offers both parameters:

- `InjectionUnit1.sv_rPeakBackPrPartHost` (relative value -> hydraulic pressure)
- `InjectionUnit1.sv_rPeakBackPrPHost` (absolute value -> specific pressure)

An electrical CC200 machine offers also both parameters, but they always show the same value. This value is the absolute value (specific pressure).

A CC300 machine only offers absolute values. Therefore, the machine only has one parameter. This parameter always shows the absolute value (specific pressure) regardless of whether it is a hydraulic or an electrical machine.

- `cc300://imm/cm#//c.InjectionUnit2/p.sv_rPeakBackPrPart/v`

A hydraulic CC100 machine offers both parameters like the CC200 machine:

- `2241` (relative value -> hydraulic pressure)
- `3106` (absolute value-> specific pressure) Attention: This parameter is not part of the process data.

An electrical CC100 machine only offers the parameter for the absolute value (specific pressure). The parameter for the relative value is not available on such machines.

Parameters for cavity pressure sensors always show the absolute values (specific pressure) by using special parameters.

## 9. Determination of the parameter names

For the determination of the parameter names there are different approaches, which in part leads to different solutions:

- Customer specific short description of the parameters (e.g. cooling time actual value)
- Reference on screen pages
- Reference to PD selection pages.
- Short names of the SPS
- Possibly Euromap 63 Standard identifications

### 9.1. Description documents

#### 9.1.1. Standard table

The first access to parameter determination is the standard parameter table. This document contains the following information:

- Short description
- Description in German and English
- Target / actual value
- Data type
- Unit
- Absolute / relative values
- Parameter description according to CC100 / CC200 and CC300
- Optional mapping to Euromap63 descriptions

If the parameter table is needed, please contact [service.softwareproducts@engel.at](mailto:service.softwareproducts@engel.at).

#### 9.1.2. Process values

The process values are specially buffered parameters that are maintained for at least one cycle. Thus, the Euromap63 interface module has enough time to fetch this data in the following cycle.

Standard lists of these process data are available in separate documents for CC200 and CC300.

- StandardProcessDataCC200.pdf
- StandardProcessDataCC300\_de.xlsx

If needed, please send Email to [service.softwareproducts@engel.at](mailto:service.softwareproducts@engel.at).



## 9.2. Search for parameters on the machine

The following chapter describes the possibility to search for parameters directly on the machine.

### 9.2.1. CC100

#### 9.2.1.1. Infolog (only set values)

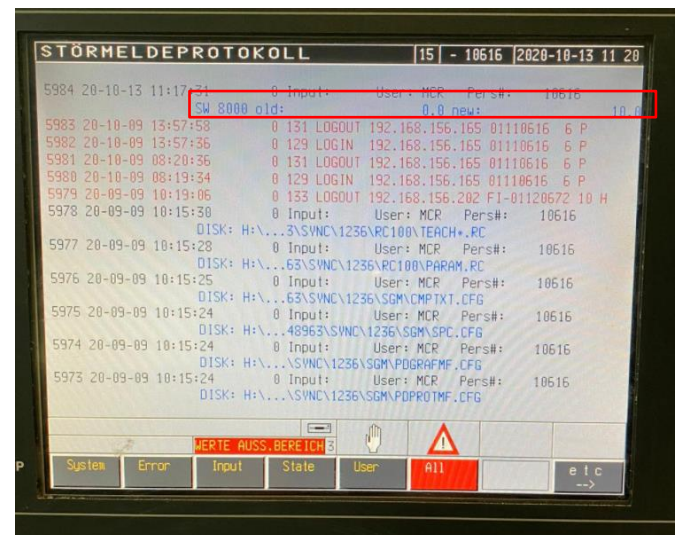
1. Change the desired parameter value on the machine (example cooling time 0 to 10)



2. Open the alarm report



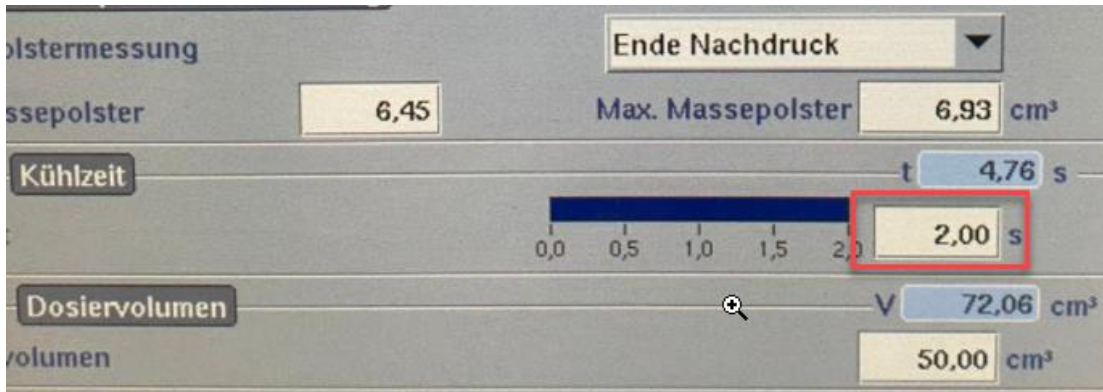
3. The MF number of the cooling time can now be seen at the beginning of the entry. (SW 8000)



## 9.2.2. CC200:

### 9.2.2.1. Infolog (only set values)

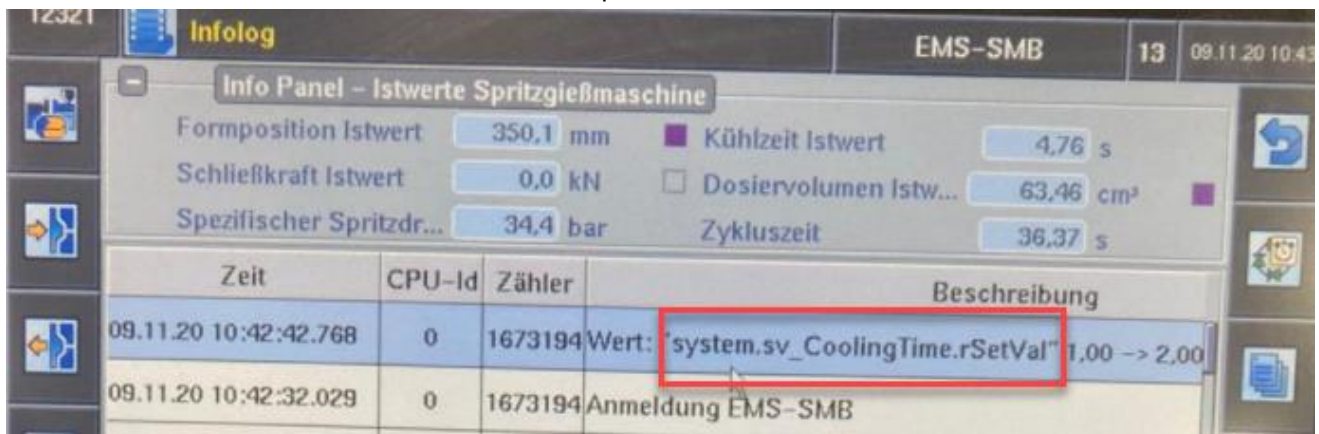
1. Change the desired parameter value on the machine (example cooling time from 1 to 2)



2. Open the Infolog



3. Parameter value can be seen in the description



## 9.2.2.2. Screen page

### Actual values

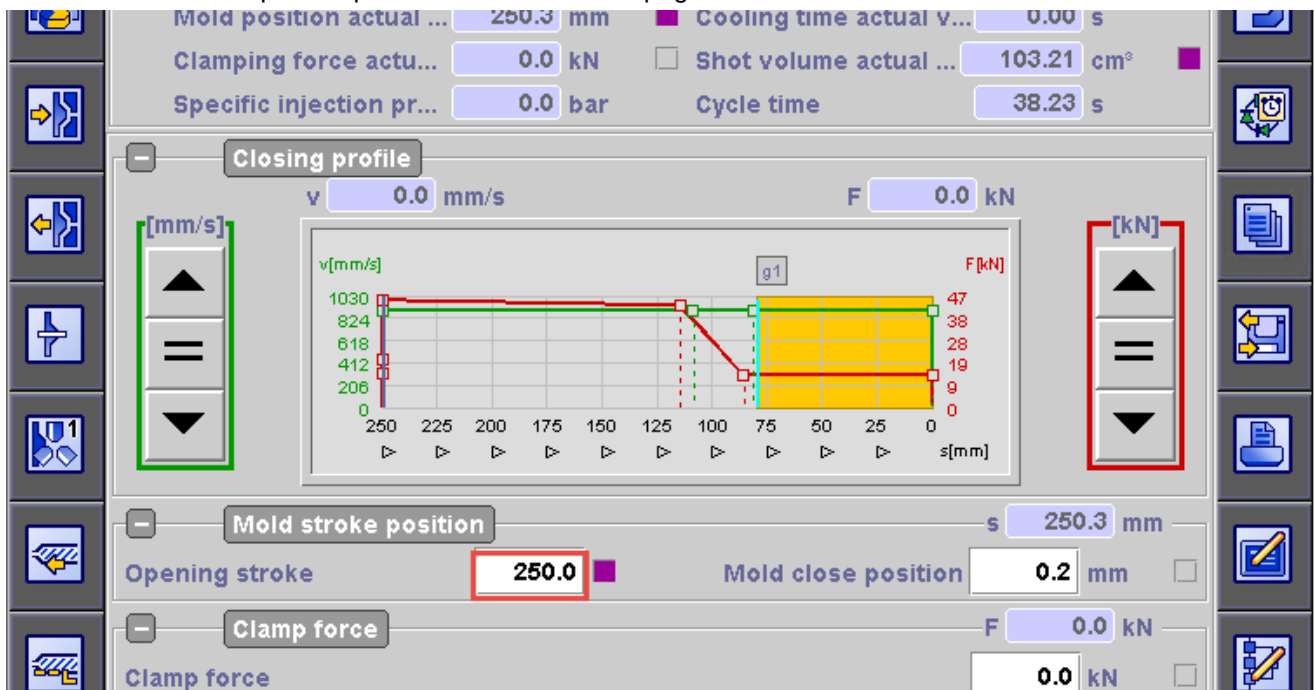
For parameters for actual values, please use our parameter EXCEL or send an official request to ENGEL or:

If a virtual ENGEL machine and a level 13 user is available, the parameter IDs of the actual values can be determined with the right mouse button on the corresponding field of the actual value.

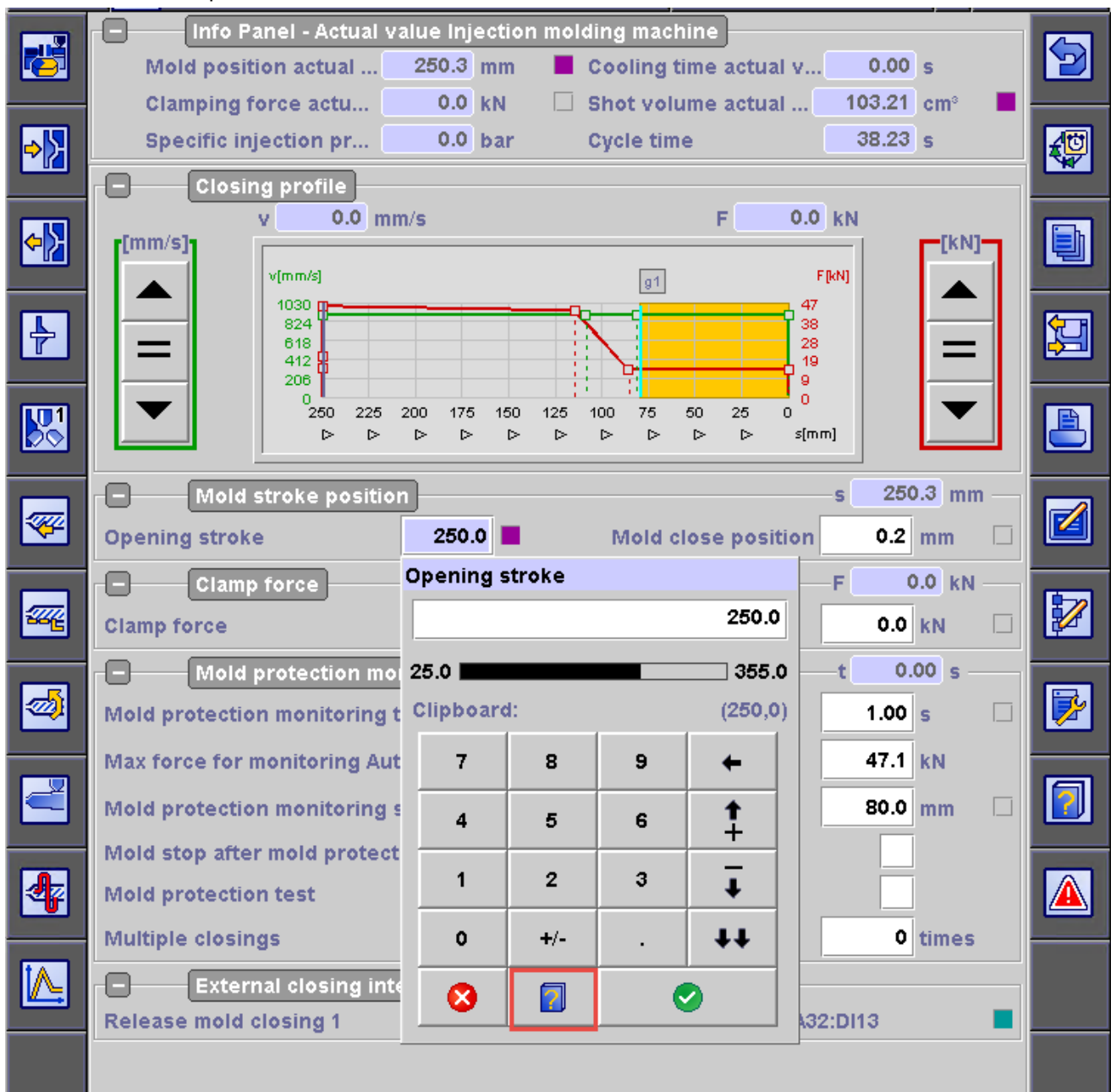
### Set values

If there is a user with level 13 available for the control, you can also request parameters using the help function.

- Select the requested parameter at the screen page

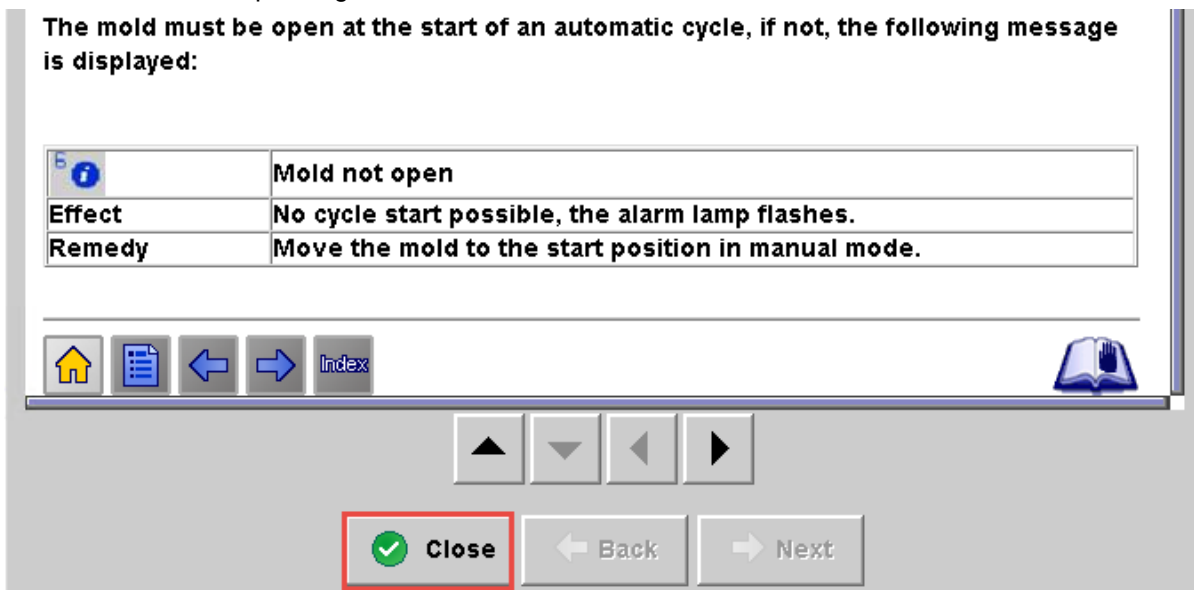


- Click the help icon

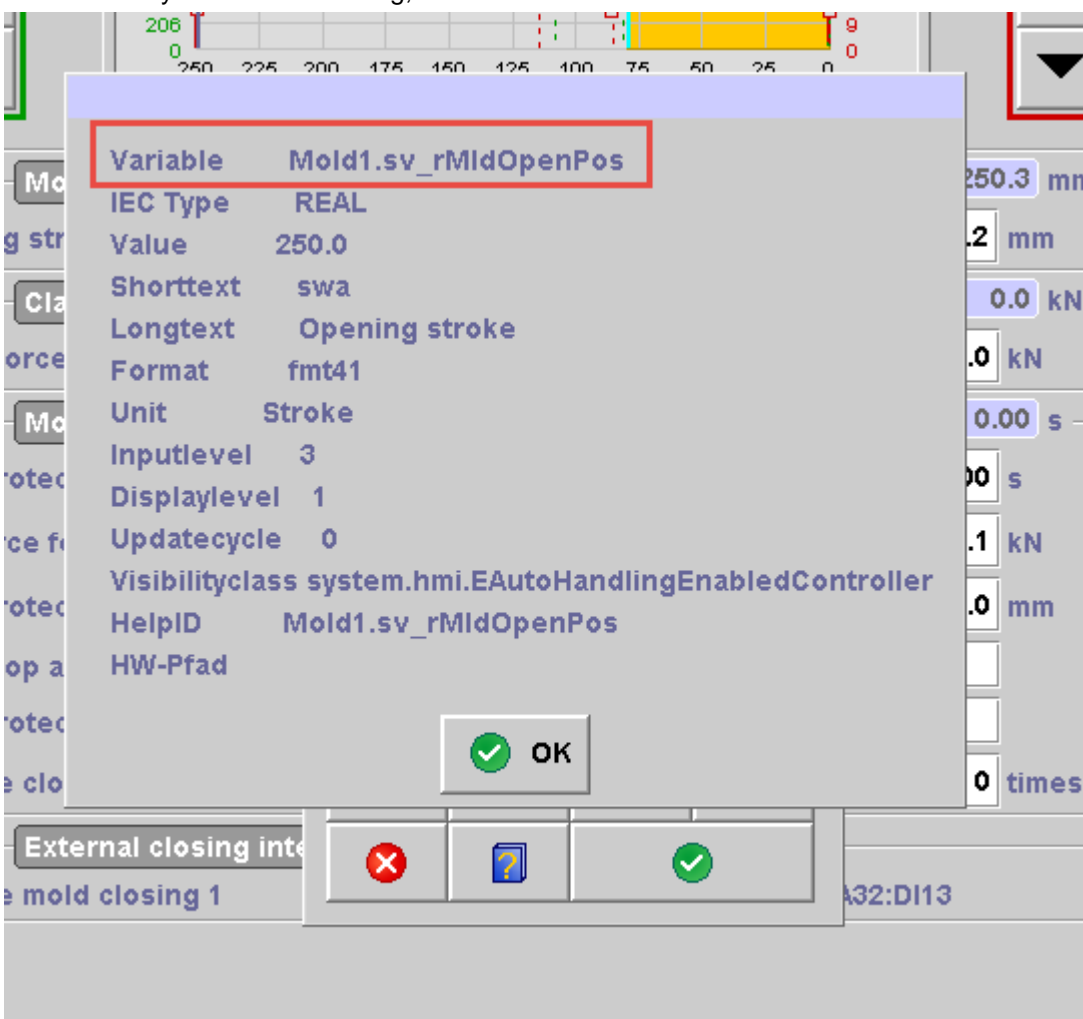


- Close the help dialog

The mold must be open at the start of an automatic cycle, if not, the following message is displayed:



- Now you can see a dialog, which contains the variable name:



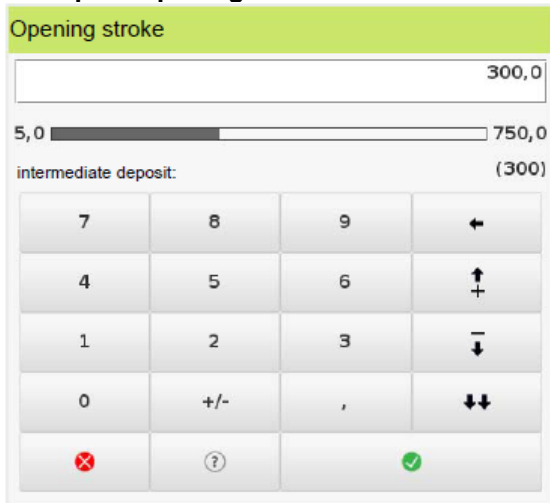
## 9.2.3. CC300

### 9.2.3.1. Screen page >= V4.72

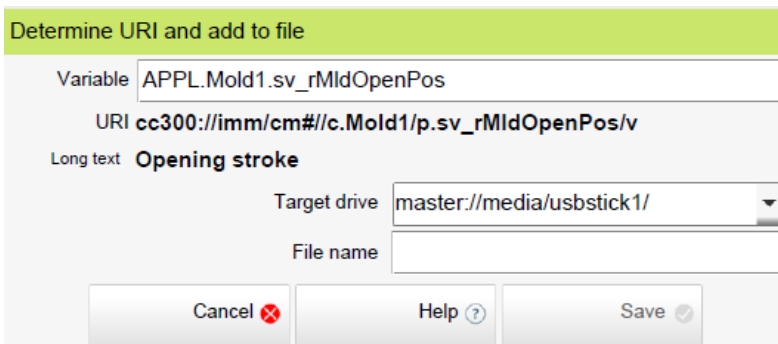
To determine the URI for a specific parameter proceed as follows:

1. Log on as a user with Level 11 rights
2. Tap the desired parameter on the screen so that the input keyboard is displayed.

#### Example: 'Opening stroke'

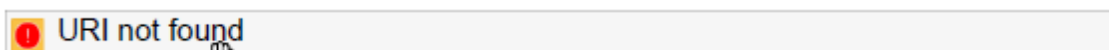


3. The dialog box closes again
4. Press **[Determine URI]** in the function menu.
  - a. The following dialog box is displayed with the data of the previously selected parameter:



5. Change the target drive, if required and input the filename. The control unit automatically adds the extension '.csv' to the filename while saving it. teinamen beim Speichern automatisch um die Erweiterung.
6. Save  
If the file does not yet exist in the target drive, it is created by the control unit. Otherwise the control unit adds the current URI to the file:

If the control unit does not find the 'variable', the following message is displayed:

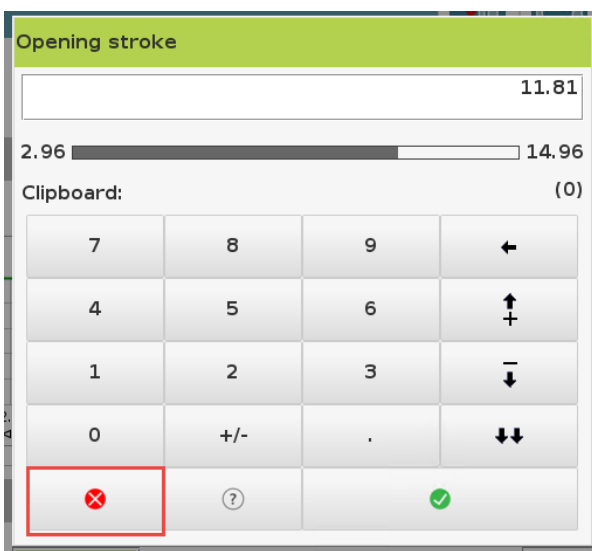
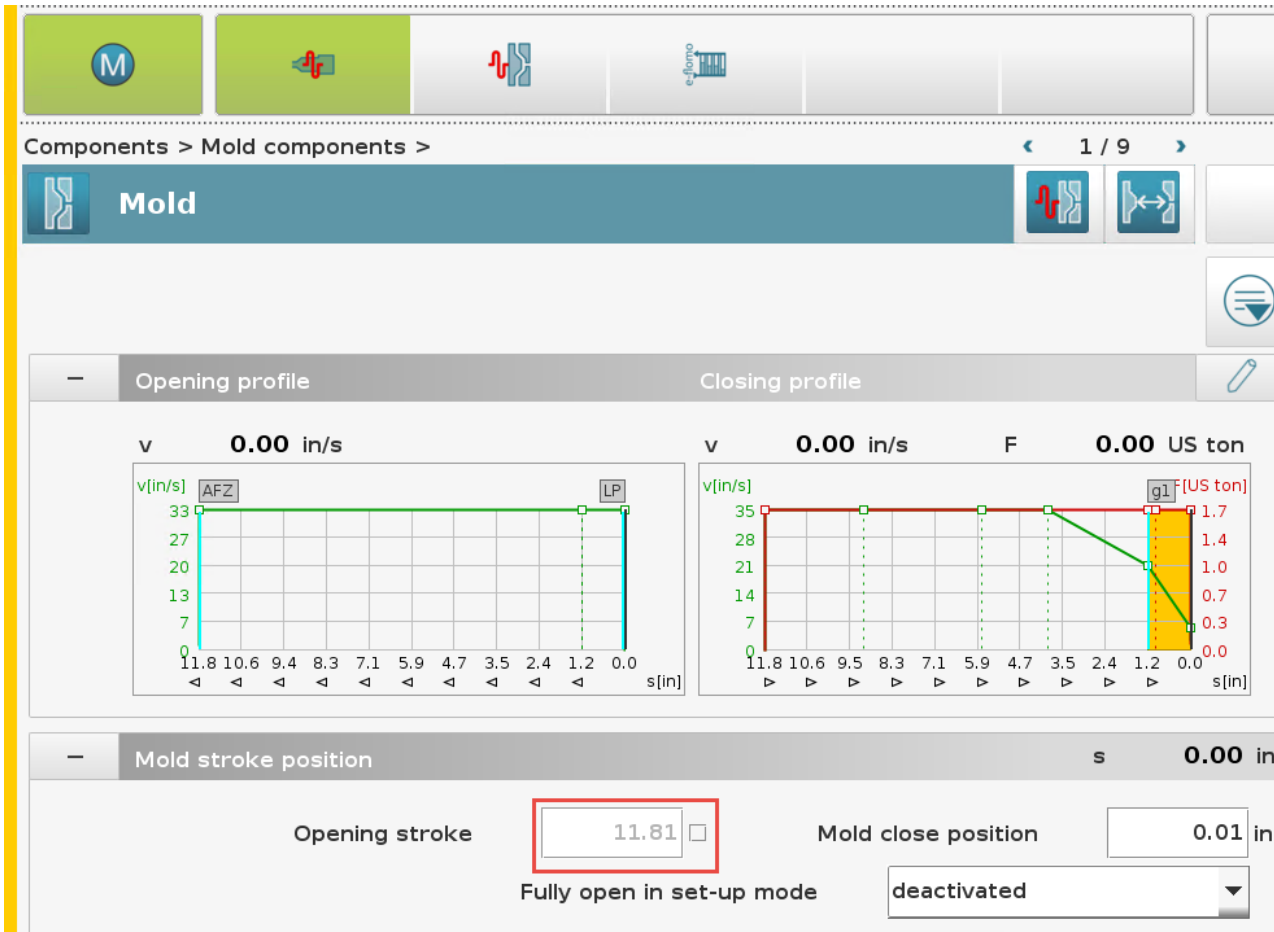


## 9.2.3.2. Screen Page < V4.72

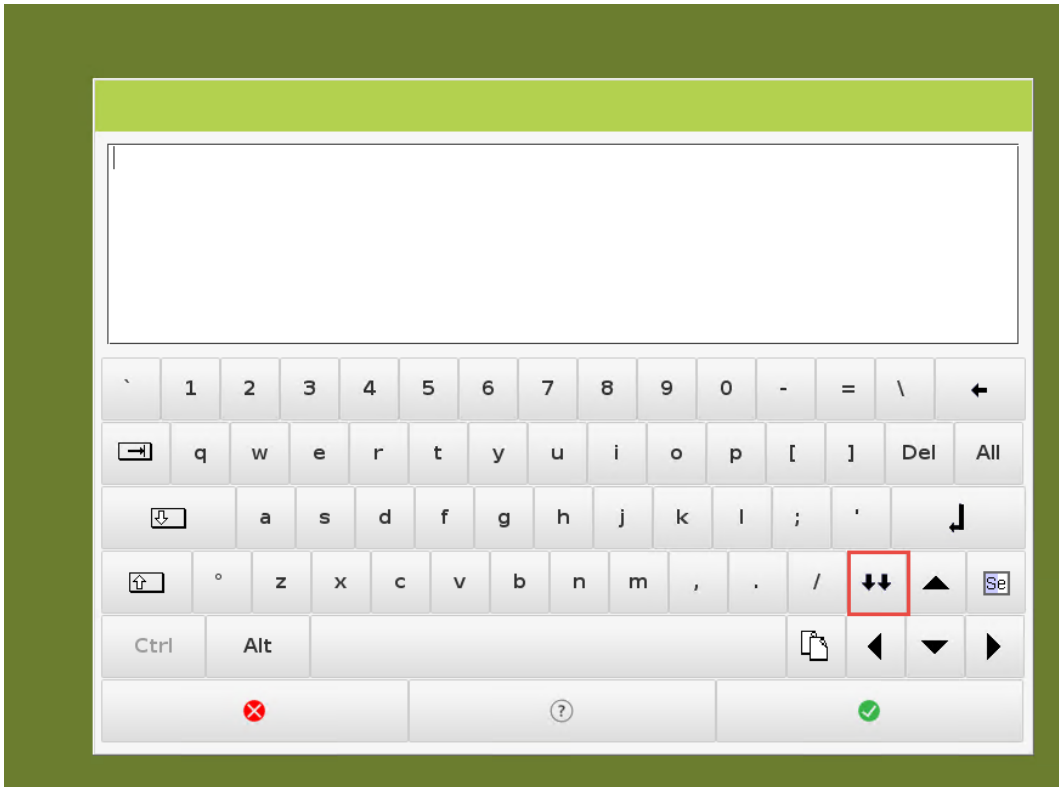
### With User Level 13

The parameter ID can be determined as follows:

- click on the required parameter on the screen page
- You can close the window after it has popped up.
- The Parameter details are in the clipboard now.

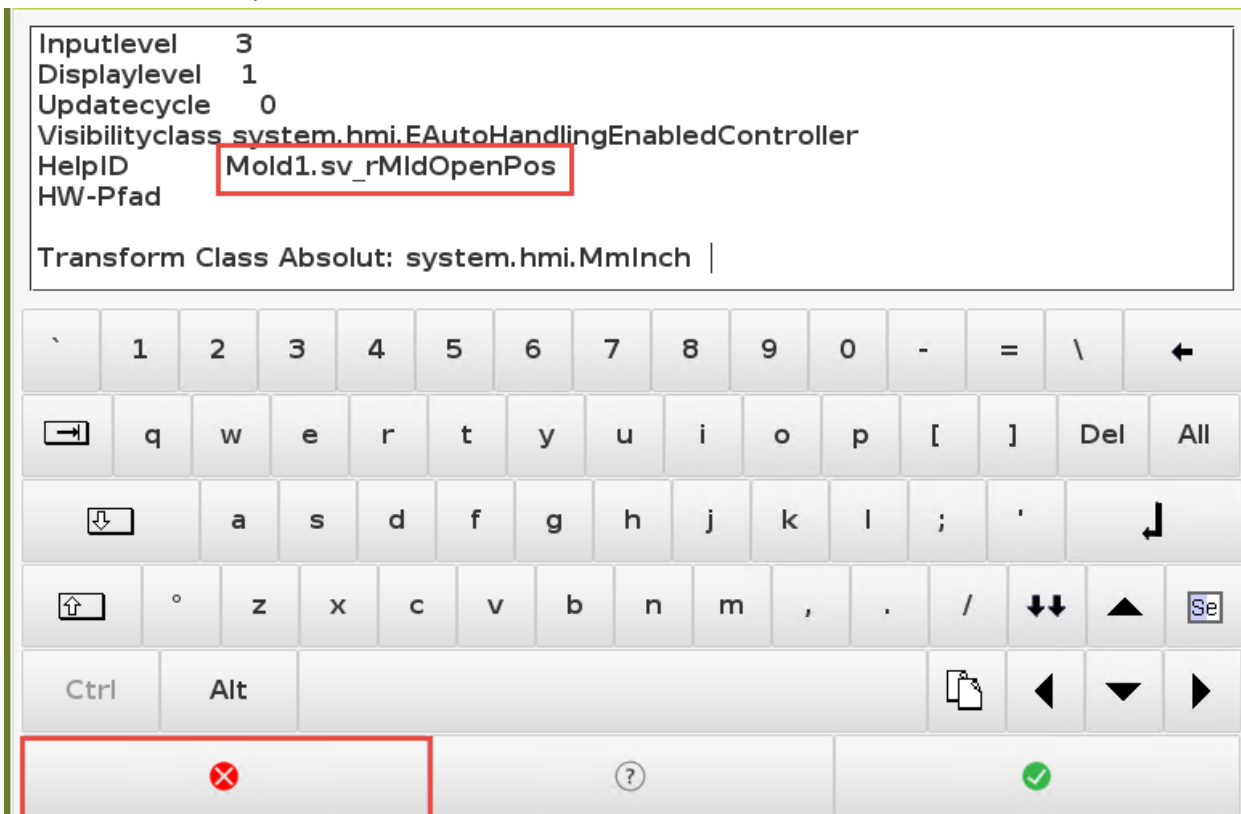


- select menu - Component - Office – Notes
  - o You can paste the parameter details here:



The **helpID** is the text we will need later to find the appropriate parameter.

Normally it is automatically in the clipboard but there are some versions where you have to enter it manually so take a note of the helpID now.





- The next step is to open the Component model browser:

The screenshot shows the ENGEL software interface. On the left, a 'Function' menu is open, listing various options. The 'Screen page selection' option is highlighted with a red box. In the background, a 'Screens' dialog box is open, showing a tree view of system components. The 'Component model browser' is highlighted with a red box. Below the tree view, a 'Properties' section is visible, containing fields for Name, \_P\_classpath, URI, iconname, titlekey, Display, Rollers, and Visu station. The 'Display' field is empty, while the others contain specific values. At the bottom of the dialog, there are three buttons: 'Cancel', 'Help', and 'Display', with the 'Display' button highlighted by a red box.

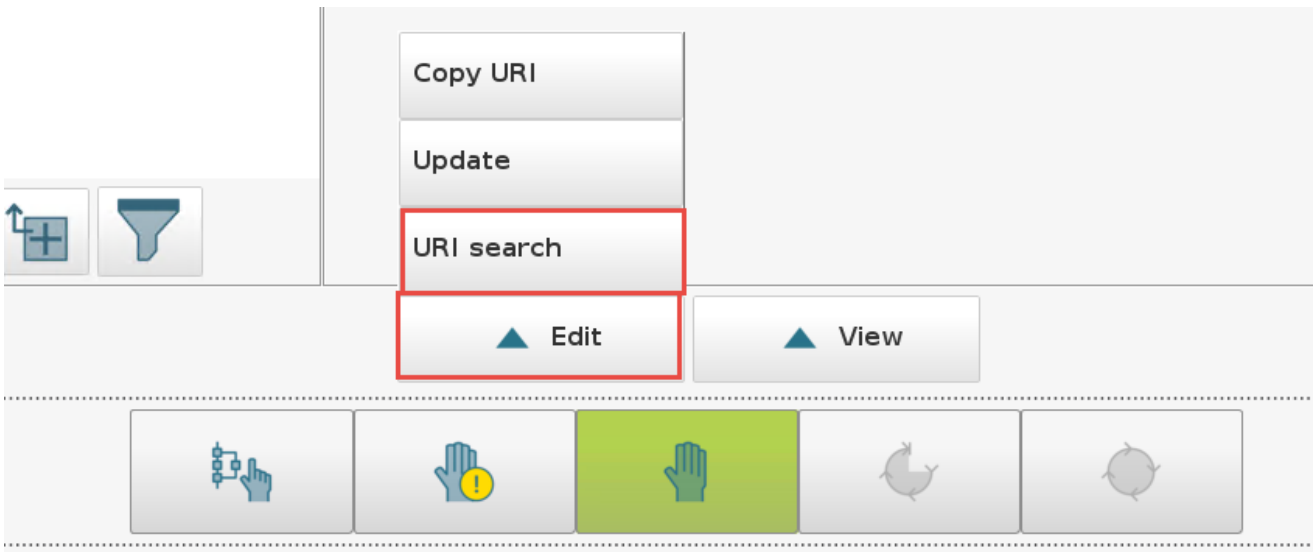
**Function Menu:**

- PDF output
- Write parts data
- Read parts data
- Information about current parts data set
- Read standard machine sequence
- Screen page selection**
- VarInfo
- Calculator
- Settings protocol
- Acknowledge alarms

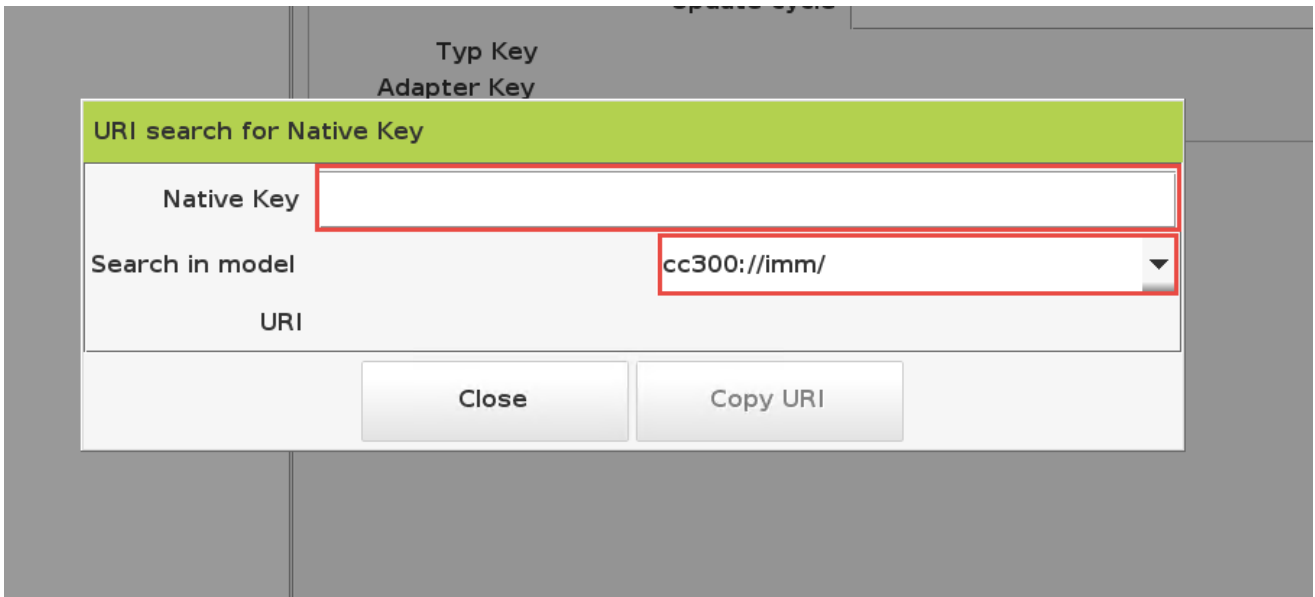
**Screens Dialog Box:**

- Tree view: cc300://system/
  - Alarm
  - Component model browser**
  - Data set management
  - EtherCAT
  - System administration
  - Infolog
  - System capacity utilization
  - IO-Overview
  - Oscilloscope
  - Notes
  - Software information
- Properties section:
  - Name: Component model browser
  - \_P\_classpath: com.engel.cc300.hmi.componentviewer.ComponentViewerEditor
  - URI
  - iconname: com.engel.cc300.hmi.componentviewer.component
  - titlekey: com.engel.cc300.hmi.componentviewer.resource.title
  - Display: [Empty field]
  - Rollers: UserGroupImpl ROLE\_SERVICE\_ENGEL
  - Visu station: [Empty field]
- Buttons: Cancel, Help, **Display**

- Open the menu "Edit" and select the "URI search" button.



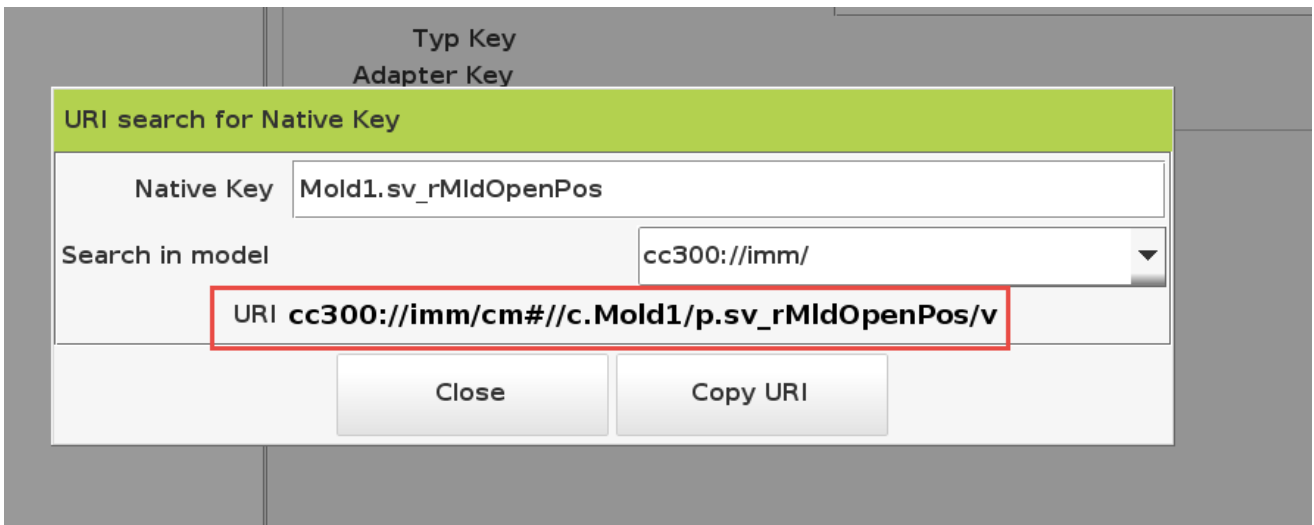
- Change the search model to cc300://imm/ and click in the field for the Native key.



- Now enter the helpID here. Either you can paste it, or you have to write it manually.



- Now you will see the CC300 parameter which you can use in your euromap63 interface.



## Without User Lever 13

Same procedure as in 9.2.3. Control CC300 (Userlevel 13). Here only the conversion of the so-called "Native-Keys" by means of component model browser in the CC300 URI is omitted. Instead, it is possible to convert the key in a generic way. This is possible for almost all parameters except the heaters and e-flomo.

### Example:

Ejector1.sv\_rEjeFPos

becomes to

cc300://imm/cm#//c.Ejector1/p.sv\_rEjeFPos/v

Ejector1.sv\_BackwardAvailableInSequence[1]

becomes to

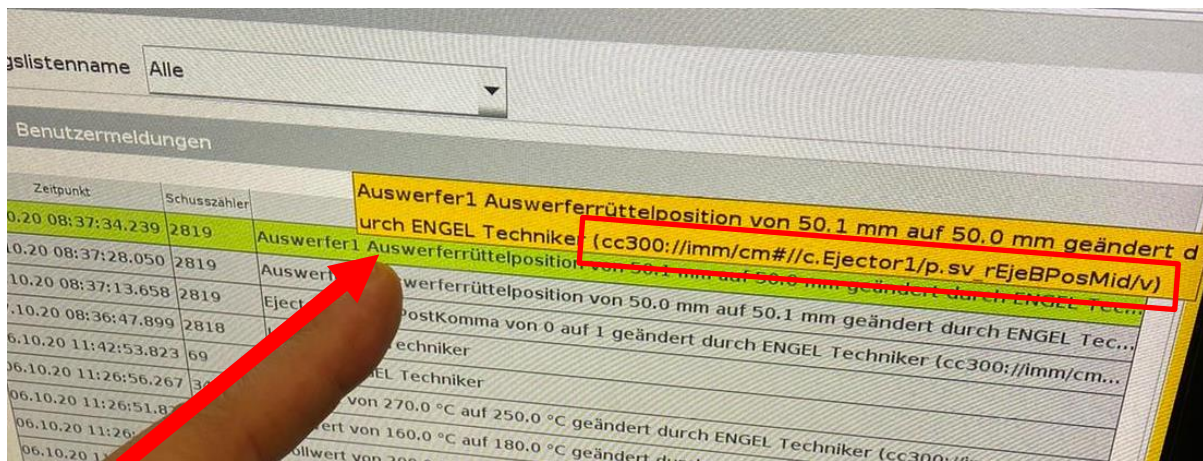
cc300://imm/cm#//c.Ejector1/p.sv\_BackwardAvailableInSequence/v/p.[1]/v

## 9.2.3.3. Infolog (only set values)

On the CC300 control you can use the Infolog to easily find parameters that have recently been changed. Changing the parameter value generates an entry in the info log. By clicking on the entry, the entire parameter URI can be seen.

proceed as follows:

1. Search for the desired parameter on one of the control screens.
2. Change the parameter value
3. Call up the info log. System settings / info log
4. Click on the desired log entry



## 9.3. Search for parameters in the GETID (only Euromap 63)

The response file from the E63 GETID command provides a machine-specific list of all parameters which are set to visible on the respective machine. This list essentially includes the parameter designation, the description (long text), and some other attributes, for example the write permission. Searched parameters can now be found via the description text (long text). This descriptive text should in most cases be identical to the description text of a parameter on the control visualisation.

The procedure is as follows:

- Search for the desired parameter on one of the control panel screens
- Use the corresponding description text from the screen to search for the corresponding parameter designation in the E63 GETID file via text search.



Extract from the E63 GETID reply file:

```
@Mold1.sv_rMldOpenPos, N, 4, 1, 1, "Stroke", "Opening stroke"
```

## ENGEL specific extensions to the E63 GETID response

An additional file in the CSV format is available for the control generations CC200 and CC300. These can be opened with Excel and display the GETID information in a clear table view. Mappings of the various symbol types (Euromap63, CC100 number and CC200 or CC300 symbol) are used in both tables. These files can be found in the Euromap63 installation path.

Example: `C:\ENGEL\Euromap63\System\Access\MACHINES\<machineId>\CONFIG`

Specifics CC200:

- Name: configCache.bin

Specifics CC300:

- Name: configCache.csv
- Contains information about whether a parameter belongs to the buffered process data or not (**isProcessParameter**)

For the control generation CC100 there are only limited possibilities for a parameter search on the machine. Here the parameter search takes place via the file ConfigE63.txt file. When the X2fi is started up, this file is written to the `C:\ENGEL\Euromap63\System\Access\MACHINES\<machineId>\CONFIG` directory. It contains a machine-specific list of all parameters that the machine has made visible. With the CC100 these are loaded from the EBIAS diskette. The execution of the GETID job does nothing else than compare this file with the existing machine parameters and display it as GETID.dat.

The syntax of the file is composed of the following elements:

MF-Number	Unit according to E63	Decimal places	Write premissions (if setvalue = 0)	Physical unit	Description text
@2100	,N	,0004,01	1,	,mm",	,metering stroke"

Based on this information you can e.g. search for the description text and get the remaining elements.

## 10. Heating zones

The definition of heating parameters depends on the individual machine configuration. This configuration is also dependent on the order scope of the machine when it was shipped. Moreover, it is customisable by the customer later. Therefore, it is not possible for Engel to offer a generally valid list of heating parameters. A list of heating parameters has to be generated individually for each machine and customer based on their heating configuration.

This document describes how the heating parameters are build up for the desired control type. Please note that there is a special difference on the CC200 machine. The structure of the heating parameter names for online parameters (Euromap63) is different as for part data set parameters. The following chapter for the CC200 machine describes only the structure for online parameters.

### 10.1. CC100

The heating zones with a CC100 control are displayed on the panel as follows:

zone affiliation	zone number	set value	actual value	
Nozzle.....	1.	0 . 0 ° C	0 . 0	OFF
Flange ....	2.	0 . 0 ° C	0 . 0	OFF
Cylinder 3-point contr.	3.	0 . 0 ° C	0 . 0	OFF
Cylinder 3-point contr.	4.	0 . 0 ° C	0 . 0	OFF
Cylinder 3-point contr.	5.	0 . 0 ° C	0 . 0	OFF
Cylinder 3-point contr.	6.	0 . 0 ° C	0 . 0	OFF

In the case of CC100 controls, the zone allocation is machine-specific and should therefore be checked on the system before the parameter search.

If the desired zone is known, the zone-specific MF number can be obtained from the GET-ID.

Global zone MF numbers:

Zone 1 set value: @14000 Zone 1 actual value: @15200	Zone 2 set value: @14001 Zone 2 actual value: @15201	Zone 3 set value: @14002 Zone 3 actual value: @15202
Zone 4 set value: @14003 Zone 4 actual value: @15203	Zone 5 set value: @14004 Zone 5 actual value: @15204	Zone x set value: @... Zone x actual value: @...

The relationship between zone and MF number is identical throughout the control system. Only the zone affiliation is machine-specific, this can be checked directly on the system.

GETID parameter structure:

Zone 1 set value:

@14000 ,N,0003,01,1,"°C","temp.zone 1"

Zone 1 actual value:

@15200 ,N,0003,01,0,"°C","temperature zone 1"

## 10.2. CC200

The parameters for CC200 are built up as follows:

@Heating.zone number.parameter

Zone number: sv\_Zone  $n$  = zone number starting with 0 up to total number of configured zones

<u>Parameter:</u>	rActualTemp	real value
	rSetValue	set value
	rActionSignal	heating power real value [%]

### Example:

The parameter for the real value of zone 10 is:

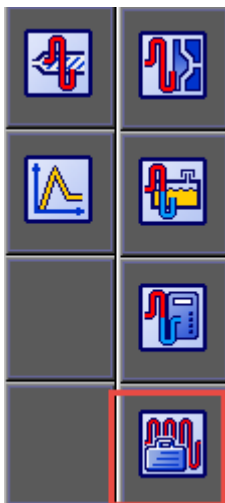
@heating.sv\_zone10.rActualTemp

### How to check the zone number at the machine control:

The usage of the zones at the machine can be requested at the "heating configuration" page. You can find it at the Heating page.

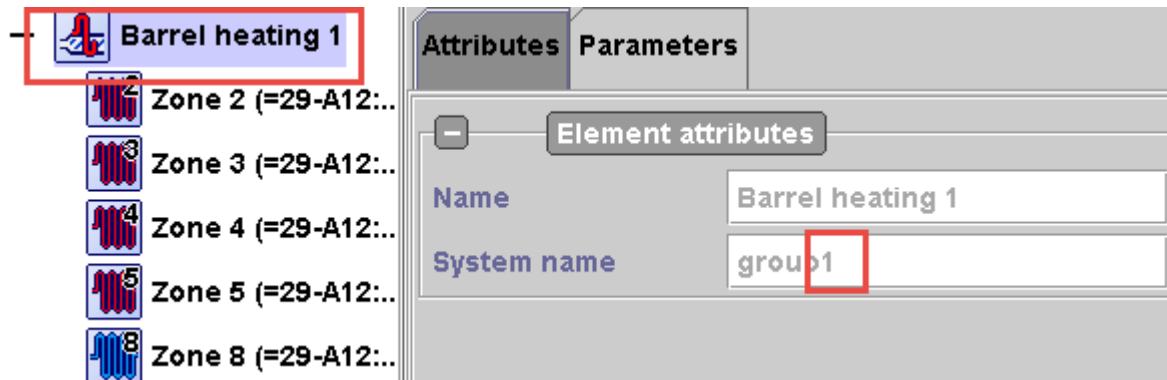
### You need at least user level 11 to do the following operations!

On the heating configuration page, you can check the appropriate group of this zone.



You can find the system name at the tab "attributes".

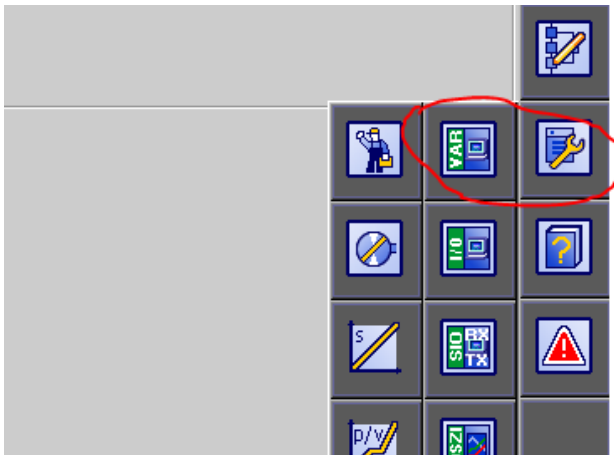
It is "group1" in this example. The index 1 is decisive. (group1)



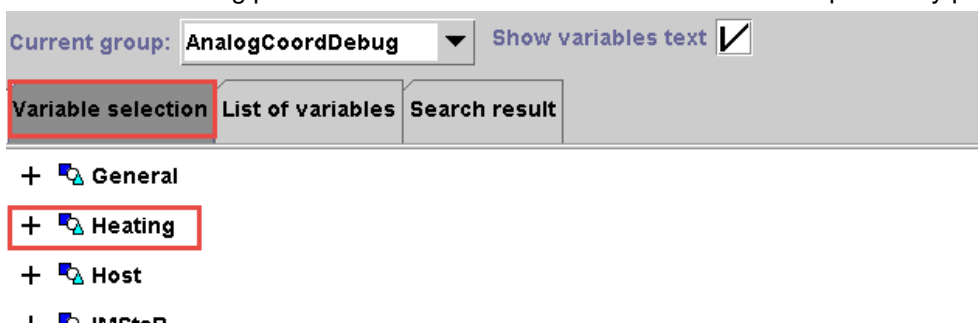
The 4th cylinder zone is configured as third heating zone inside the group barrel heating 1.

Now you have to look for the description of the zone which is configured as third zone in this group (1).

You have to switch to the variable monitor for that purpose.

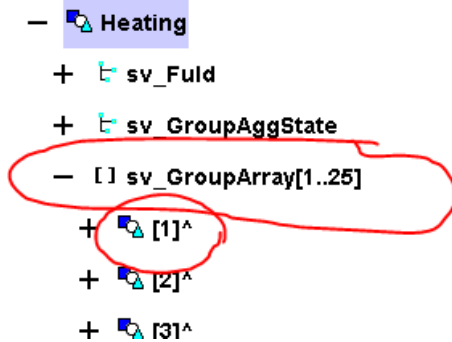


Look for the Heating parameters in the "Variable selection" tab and expand it by pressing "+"





Inside this tree view, you will find the parameter „sv\_GroupArray[1..25]” on the third position which you also need to expand.

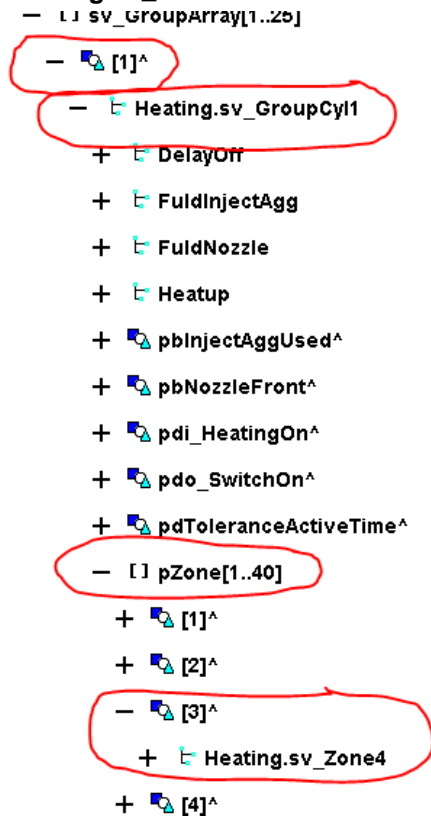


The next step is to look for the index of your group in this list, in this example it is “1”

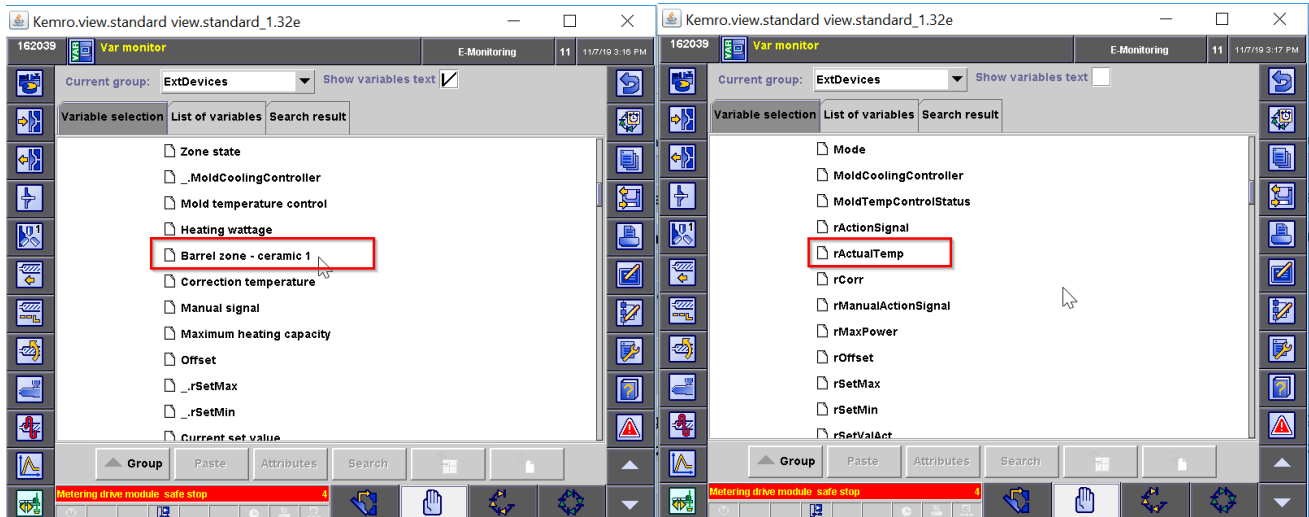
According to that, we need to expand the group 1 and its sub-nods „Heating.sv\_GroupCyl1” and “pZone[1..40]”. Now, you have to select the index of the required zone (in our example the third zone) and also expand it.

At this point, you can see the parameter name of the heating zone. In this example:

## Heating.sv\_Zone4



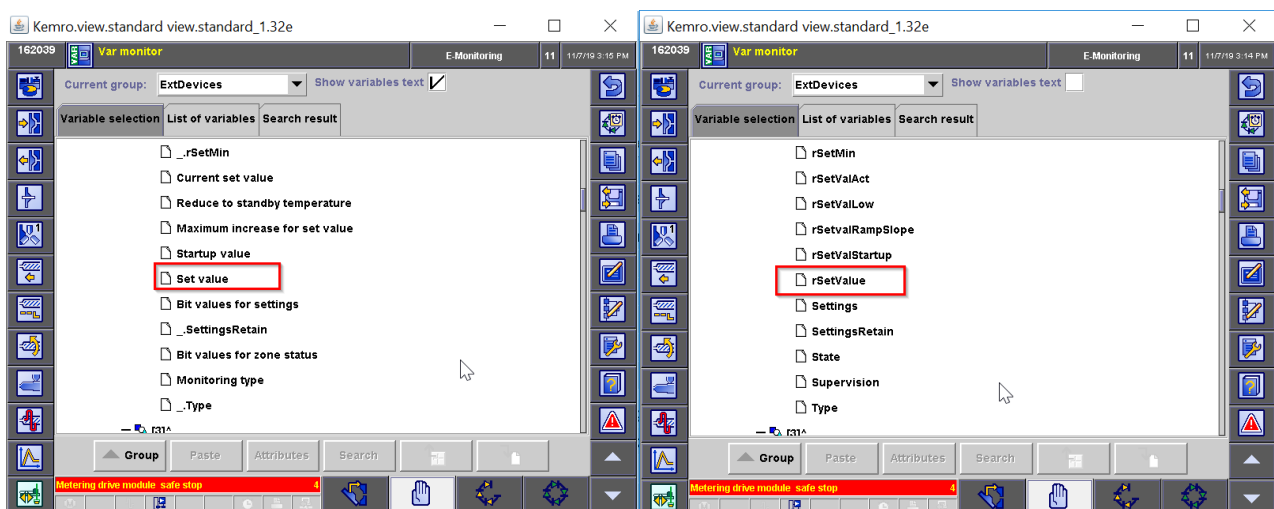
The last part of the parameter name of the actual value can be cleared by searching below the node shown above for "Barrel zone - ceramic 1" and then switching the display "Show Variables test". As shown in the two screenshots below:



Therefore, the set value parameter of the fourth cylinder zone will be:

**@heating.sv\_zone4.rActualTemp .**

The last part of the parameter name of the setpoint is deactivated by searching below the node shown above for "Set value" and then switching over the display "Show variable text". As shown in the two screenshots below:



Therefore, the set value parameter of the fourth cylinder zone will be:

**@heating.sv\_zone4.rSetValue**

## 10.3. CC300

The parameters for CC300 are built up as follows:

@cc300://imm/cm#//c.TemperingComponent/group-number/zone-number/v/parameter/v

Group-number:	p.TemperingGroup	$n$ = group number of the heating group
Zone-number:	p.TemperingZone	$n$ = zone number inside the group starting with 1
Parameter:	p.ActValue	real value
	p.SetValue	set value
	p.ActionSignal	heating power real value [%]

### Example:

The parameter for the real value of the nozzle heating (=first zone of the group cylinder heating) is therefore:

@cc300://imm/cm#//c.TemperingComponent/p.TemperingGroup1/p.TemperingZone1/v/p.ActValue/v

### How to check the zone number at the machine control:

You can request the group and zone numbers at the heating configuration page in the CC300 machine control. (Tasks-> System settings ->heating configuration)



### Group number:

You can see the group number in the Attributes tab by selecting the heating group.

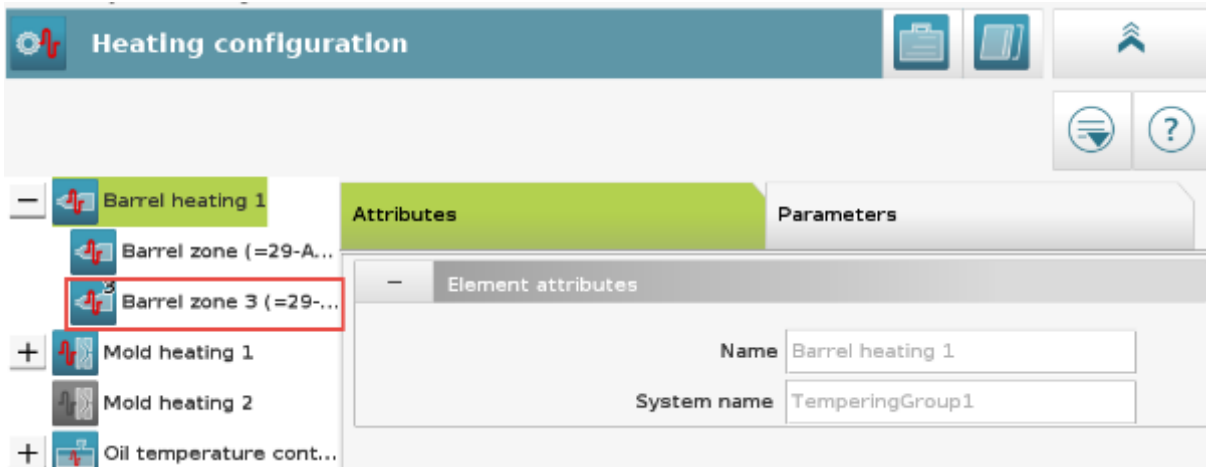
In this example: "TemperingGroup1".



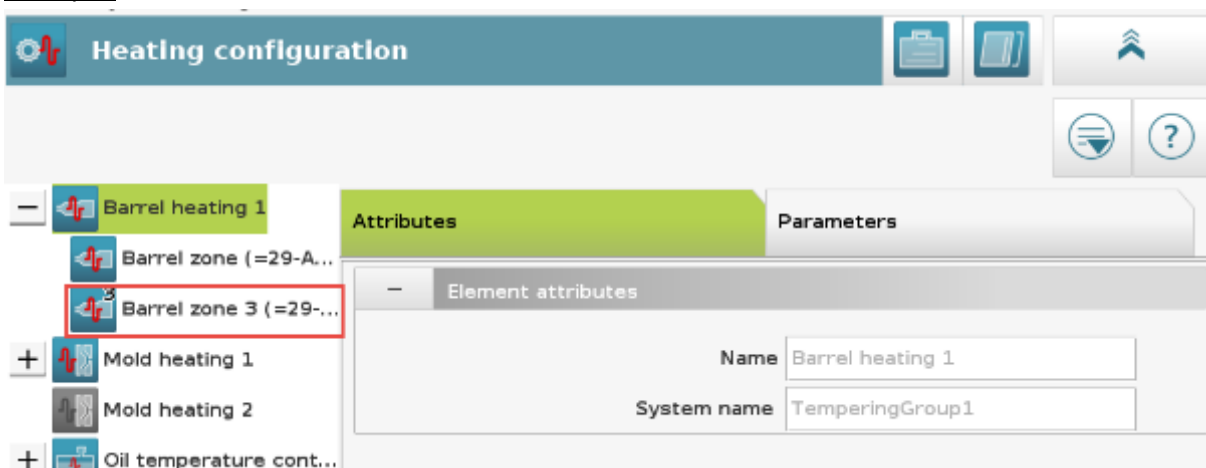
## Zone number:

The zone number results from the position of the zone inside the heating group.

In the following example, the “Barrel zone 3” has zone number 2 because it is in the second position inside the group “Barrel heating 1”.



## Example:



The set value of „Barrel zone 3“(second zone in this group) of heating group „Barrel heating 1“(System name „TemperingGroup1“) is this parameter:

**@cc300://imm/cm#//c.TemperingComponent/p.TemperingGroup1/p.TemperingZone2/v/p.SetValue/v**

### 10.3.1. CC300 and influence of the heating configuration

In principle, the heating configuration has an influence on the actual meaning of the parameter IDs (URIs). Changing the heating configuration often only affects the parameter IDs after restarting the CC300 controller.

So that these changes also have an effect on the representation of the parameter IDs (E63 GETID), the E63 configuration of the affected machine must also have been rebuilt.

If the meanings of the heating parameter IDs are to be the same between different machines, this must be taken into account in the heating configurations of the machines.

#### **Example:**

```
cc300://imm/cm#/c.TemperingComponent/TemperingGroup1/p.TemperingZone2/v/p.SetValue/v // Cylinder zone 1 set value
cc300://imm/cm#/c.TemperingComponent/TemperingGroup1/p.TemperingZone3/v/p.SetValue/v // Cylinder zone 2 set value
cc300://imm/cm#/c.TemperingComponent/TemperingGroup1/p.TemperingZone4/v/p.SetValue/v // Cylinder zone 3 set value
```

If the second of three cylinder heaters is removed from the configuration, the meaning of the parameter IDs change as follows after restarting the controller and reconfiguring E63:

```
cc300://imm/cm#/c.TemperingComponent/TemperingGroup1/p.TemperingZone2/v/p.SetValue/v // Cylinder zone 1 set value
cc300://imm/cm#/c.TemperingComponent/TemperingGroup1/p.TemperingZone3/v/p.SetValue/v // Cylinder zone 3 set value
```

# 11. flomo and e-flomo

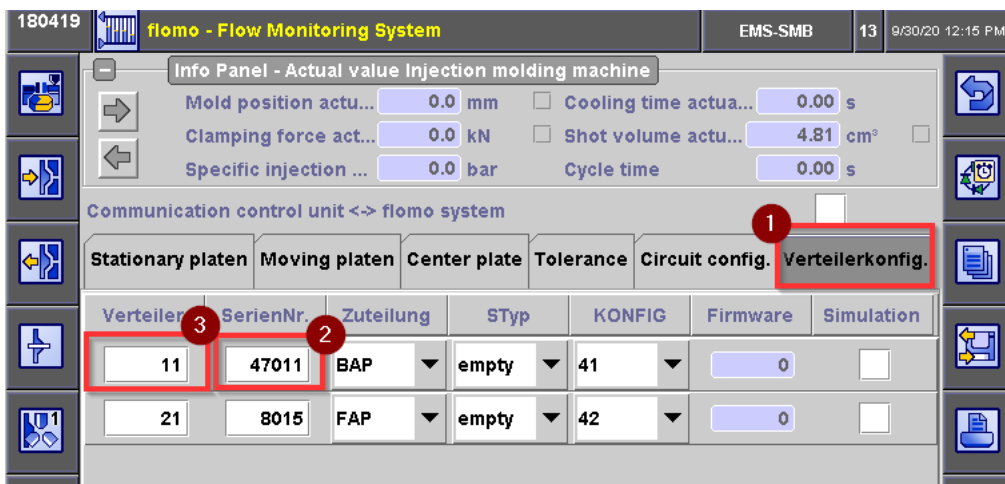
The central element at flomo is the so-called heating circuit distributor (distributor box). This contains several heating circuits or runs. Depending on the heating or cooling required, there could be several distribution boxes at different positions on the machine with different numbers of circuits.



Illustration of a distribution box with customer-specific designation (11)

In addition to the customer-specific designation, the distribution box identifies itself with a serial number that is unique in the machine, with which the software-based sequence of the distribution boxes is ultimately determined.

The serial number can also be read on a nameplate on the distribution box.



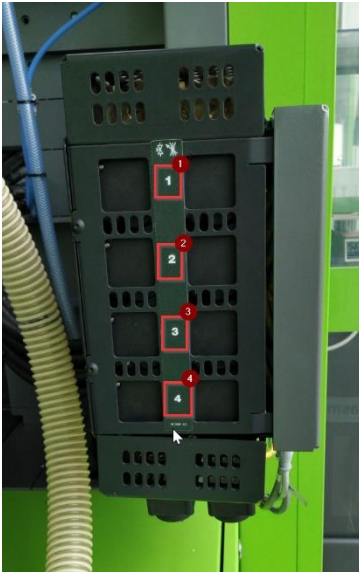
Mapping of the distribution box sequence as defined in the configuration

1: Tab distribution box

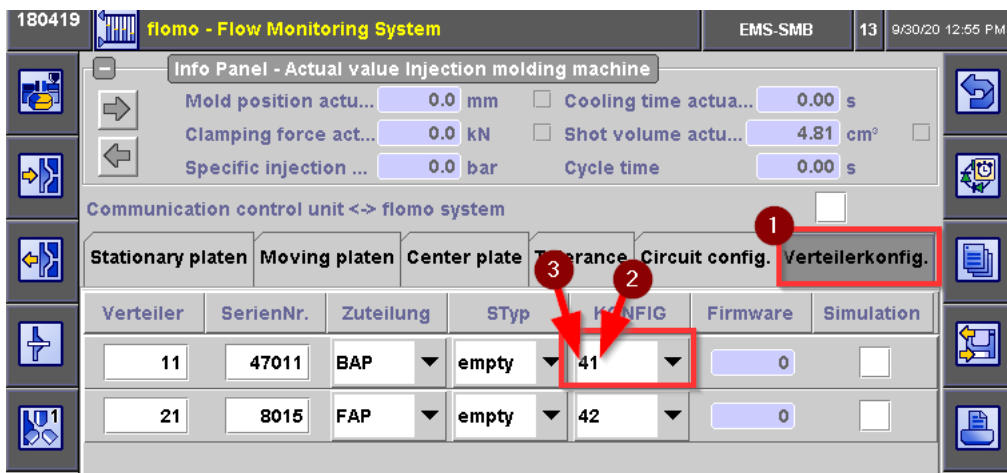
2: Definition of the serial number

3: Customer defined name of the distribution box

A distribution box can be equipped with 4, 6 and 8 circuits. Up to 16 are reserved in the software. However, it is currently not foreseeable when these will also be required. The following picture will show a distribution box with four circuits.



Attention: Sometimes there is a need to install the distribution box in an "overturned" way. Then the numbering starts with 4 above. However, this can also be defined in the configuration so that the parameter designations remain transparent, although the visible designation "1" actually means "4" and vice versa.

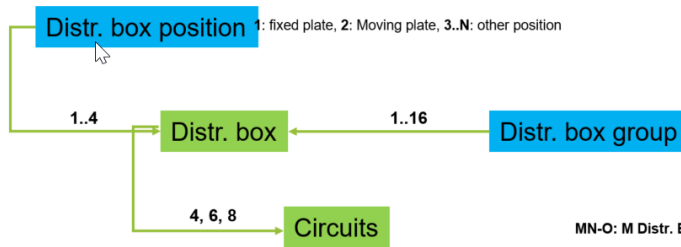


- 1: Tab distribution box
- 2: Flag „upside down“. 1 = normal, 2 = upside down
- 3: Number of circuits (in this case 4)

Up to 16 distribution boxes are combined into a distribution group. These are then connected to the central machine control via a single serial interface and the “daisy chain” concept. From the 17th distribution box onwards, another serial interface is required and a new distribution group is established.

The following illustration should show the overall concept and terminology

FlomoX.sv\_FlomoZone[Y].rSetValueFlow



Label of distr. box <> V			
11	1	11	1
12	2		
13	3		
14	4		
21	5	21	2
22	6		
23	7		
24	8		

MN-O: M Distr. Box position, N Number of distr. box, O Number of circuit

X = distr. box group

$Y = (V - 1) * 16 + O$

V = Abstract distr. box number, created from the order of them

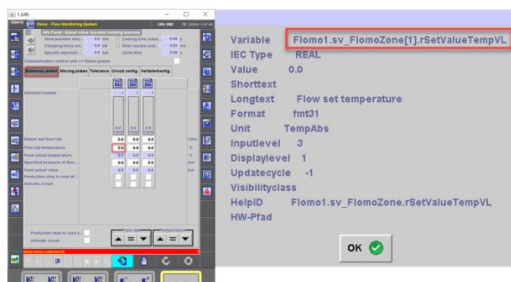
M = Distr. Box position

N = Number of distr. box

O = Number of circuit

## 11.1. CC200

Examples of specific parameter names:

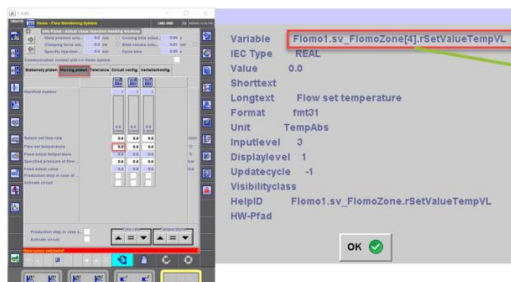


CC200

For distr. box 11 circuit 1:

Flomo1.sv\_FlomoZone[1].rSetValueFlow

The cause of this phenomenon is that the solid and the movable platen over the same distr. box are running (recognizable by the "manifold number" in the screenshots)



For distr. box 21-1:

Flomo1.sv\_FlomoZone[4].rSetValueFlow

## 11.2. CC300

The picture is much simpler for the CC300. Here the mapping of the semantics of the flomo parameters is done transparently.

cc300://imm/cm#//c.Eflomo/BoxX/p.circuitY/v/p.rSetValueFlow/v  
X ... distribution box Y ... circuit

Example:

cc300://imm/cm#//c.Eflomo/Box21/p.circuit4/v/p.rSetValueFlow/v