



hotset

# Start-up-, Service- and Operation Manual

# hotcontrol cDT+



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Translation of original manual  
Start-up-, Service- and Operation



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# 1 hotcontrol cDT+



## Benefits at a glance

- Little space requirement.
- Extended range of function - Innovative functions such as Smart Power Limitation SPL and the further development of well-known functions, contributing towards process security.
- Number of zones can be expanded very quickly and easily by Pairing Mode.
- Easy to maintain. Backup exchange or card exchange are not a problem. You only need to release the door, open it, and you have access to the controller cards. **hotcontrol cDT+** is also optionally available with external fuses.
- App for remote control via your Smartphone. Comfortable monitoring and diagnostics.
- Hot runner controller with output limitation and intelligent output distribution
- The equal control pulse distribution, Smart Peak Reduction SPR, reduces peak loads.
- Ultra fast and reaction-free current measurement.
- Data exchange, data backup, import and export of tool settings... everything is conveniently possible using the USB port on the front.
- Automatically recognizes new cards.
- Available data interfaces and protocols allow connectivity to machine control, process control systems, process data detection systems or established process optimization systems.

## 2 Typographical Conventions

Symbols and conventions are used in this document for faster orientation for you.

### Symbols



Caution

With this symbol, references and information are displayed which are decisive for the operation of the device. In case of non-compliance with or inaccurate compliance there can result damage to the device or injuries to persons.



Note

The symbol refers to additional information and declarations, which serve for improved understanding.



Example

With the symbol, a function is explained by means of an example.



Reference

With this symbol, information in another document is referred to.



FAQ

Here FAQ (Frequently Asked Questions) are answered.

To use

... specifies which materials, components etc. are to be used.

Installation

... indicates how the installation should take place, for example, order, arrangement, etc.

↗

Cross references are marked with this character. In the pdf version of the document the objective of the cross reference is reached via the link.

Equations

Calculation specifications and examples are represented in this way.

<View>

Menu points (e.g. view) are represented in this way.

|Project|

Windows (e.g. project) are represented in this way.

n.a.

Not applicable, not existing



Warning, Possibility of electric shock



General warning sign

In all cases where the adjacent symbol is to see, the start-up, service and operation manual must be consulted.



## 2.1 Additional and continuative documents



Data sheet

hotcontrol cDT+



Start-up  
Service  
Operation

Information on this topic see document  
**hotcontrol cDT+ Start-up-, Service- and Operation Manual**



Parameters

Information on this topic see document  
**Manual hotcontrol cDT+ Parameters**



Protocol PSG II

Information on this topic see protocol description **PSG II** and the corresponding object lists



Protocol Modbus

Information on this topic see protocol description **Modbus** and the corresponding object lists



Protocol Modbus/  
TCP

Information on this topic see protocol description **Modbus/TCP** and the corresponding object lists



Protocol CANopen

Information on this topic see corresponding object lists **CAN**



Firmware, language files



All available by Internet see [www.hotset.com](http://www.hotset.com)

## 2.2 Product safety and quality certification



CE marking

### 3 Security References

For the hot runner controller **hotcontrol cDT+** hereinafter referred to as device (consisting of see ↗Technical Data (page 177)), the following safety instructions must be observed.



Before installation, handling or operation of the device, please read through this start-up, service and operation manual completely and carefully.

#### 3.1 Security References for User

All persons, responsible for the mounting/start-up/operation/maintenance/servicing of the device, have to

- be skilled appropriately
- consider this start-up, service and operation manual exactly
- regard this start-up, service and operation manual as part of the product
- keep this start-up, service and operation manual during lifetime of the product
- pass this start-up, service and operation manual to all successive owners or operators of the product
- make sure, that every obtained amendment is integrated in this start-up, service and operation manual.

Please note the following safety instructions necessarily for protection against electric shock, risks of injuries and fire.

At start-up, adhere strictly to the local safety regulations as well as the safety instruction.

Consider the regulations for prevention of industrial accidents for electrical installations and equipment by government safety organization in industrial facilities.

Do not throw packaging material careless away, thermoplastic foil/ styrofoam parts etc. may get dangerous for persons.

Protect device against moisture. Do not use in areas with high humidity.

Check, that the specified voltage on the type plate is identical with the mains voltage on-site.

Ensure that the power cord and the connecting cables are not damaged by overrun, squeezing, tearing or suchlike. Protect the cords/cables against oil, sharp edges and temperatures above 70 °C.

Do not touch the mains plug with wet hands.

Lock the connected counter plug on the rear side of the device with retaining brackets against accidental removal.

Connect the connecting cable only in de-energized status.  
Place the connecting cable to prevent stumbling.

Assure yourself that the e.g. connected injection mold is linked to the protective conductor.

Do not place any tanks, filled with liquid, on the top of the device, otherwise a dangerous situation may emerge.



The device is set up so that the main switch is easily accessible so that in emergency, the machine can be shut down quickly.

The feet of the device may not be removed. Also, make sure that there is on the right and left side of the housing sufficient distance (desktop housing at least 5 cm ) so that the waste heat can escape. Around the bottom and below the bottom of the device, the air is drawn to cool the heat sink. This area must be kept clear that the air can be drawn in unhindered.

Work like e.g. maintenance and repair may be carried out by authorized and skilled qualified personnel only. Only qualified personnel, skilled and on the risks trained, may use the device. The relevant accidental regulations as well as other general approved safety-relevant, occupational-medical norms have to be obeyed. Unauthorized modifications of the device exclude liability of the manufacturer/supplier for resultant damages.


Before working on this device always switch-off the mains switch and make sure that the device is de-energized. Protect the supply voltage against unintentional reclosing.

For person and property damages, resulting of not considering this Start-up, service and operation manual or not considering these safety instruction, warranty claim terminates. For these damages the manufacturer assumes no liability.

		<p>In all cases where the adjacent symbol is to see on the device, note the safety instructions necessarily on the hot runner controller <b>hotcontrol cDT+</b> identified by this symbol/sign/label.</p> <p>In all cases this Start-up-, Service- and Operation Manual must be consulted.</p>
Warning, Possibility of electric shock	General warning sign	

### 3.2 Intended use


The hot runner controller **hotcontrol cDT+** is exclusively designed for temperature-dependent control of electric heaters (e.g. injection molds) determined within the specifications. More specific descriptions are given in this operating instructions.

	<p>When properly used, the safety of the user and the device is guaranteed. The device may only be used for the particular purpose.</p> <p>With improper use the protection to persons and property may be impaired, and is thus no longer given.</p>
---	---

For the parameterization of customer desired functions, the customer is responsible.

Uses other than the above shall be improper and exclude the liability of the manufacturer/supplier for any related persons -, property - and consequential damage.

### 3.3 Maintenance

	<p>Check regularly that the ventilation holes, located at the bottom of the device, are free of dust.</p>
---	---

A further maintenance is not necessary. Maintain a clean surface of the operating unit. For cleaning use a damp cloth. Avoid the use of solvents, cleansers and abrasives.

### 3.4 Warranty Conditions

This product is subject to the legal warranty time periods for faults or deficiencies in manufacture.

#### Content of Warranty

If a malfunction relatively occurs through the manufacture, the manufacturer/supplier repairs or replaces the non-conforming product, according to their own discretion.

The following repairs do not fall under the warranty and are liable to costs:

- Malfunctions after the legal notice periods have expired.
- Malfunctions caused through operating error and/or incorrect parameterization of the user (if the device is not operated as described in the start-up, service and operation manual).
- Malfunctions caused through other devices.
- Changes or damage to the device which do not originate from the manufacturer/supplier.

If you wish to use services within the framework of this guarantee, please refer to the manufacturer/supplier.

### 3.5 Transport and Storage

#### 3.5.1 Transport

The hot runner controller **hotcontrol cDT+** (all single components together) is packed in a stable shock proofed carton. This assures sufficient protection in normal case.



To avoid damage, the hot runner controllers must be transported **STANDING**.

#### 3.5.2 Unpacking

Check the packaging and then the device for identifiable damage incurred during transit. If damage is identified, then please get in touch with the transportation company.



In the case of damage the device may not be brought into operation.

#### 3.5.3 Storage

If you should not put the device into operation immediately, store it protected against dirt and moisture. Permissible temperature -20...70°C, average permissible humidity < 95 % per year, no condensation.

### 3.6 Lift and carry

The desktop housing device is to be carried by the handles provided, which are mounted on the two side parts.

### 3.7 Disposal

A manufacturer within the meaning of ElektroG (Electrical and Electronic Equipment), which implements the European WEEE directive 2002/96/EC in German law, is registered under number WEEE registration number DE 64958116 . The components of this device are considered here too.

## 4 Immediately after Switch ON

Immediately after Switch ON the boot monitor is executed. The system starts up and gets analyzed. Are any problems detected, the boot monitor gives information on trouble shooting. The following messages are shown.

Note Identified faults	Reason	Trouble Shooting
Font missing. Please update firmware.	The in the system used font was not loaded, and/or causes problems.	Load current firmware for CUI07 from homepage on USB stick and update firmware (see chapter ↗Update Firmware CUI07 (page 172)).
No firmware found. Please update firmware.	No firmware was found.	Load current firmware for CUI07 from homepage on USB stick and update firmware (see chapter ↗Update Firmware CUI07 (page 172)).
The user language is not compatible to the firmware. Please update the language.	The language file for the 3. language, currently provided by <b>hotcontrol cDT+</b> , does not fit any longer (e.g. texts were added)	Load current firmware for CUI07 from homepage on USB stick and update firmware (see chapter ↗Update language-file (page 175)).



We continuously further develop and improve our products and make available online updates for

- CUI07 Control&User Interface 07
- HTC 06/15 Heating Thermocouple Card

via Internet.

Call up homepage [www.hotset.com](http://www.hotset.com) and search there for the product. In the download area you find the latest firmware.

The first switch-on after leaving the factory asks for the language to use on the display (see chapter ↗Language (page 121)).

Is an USB stick, with hex-file on it, plugged in, the system runs directly after switch-on into see chapter ↗Update-Process (page 172). Otherwise the message occurs: No language file or firmware found on USB.

## 4.1 hotcontrol cDT+ starts

After successful end of boot monitor, the display changes to Standard view



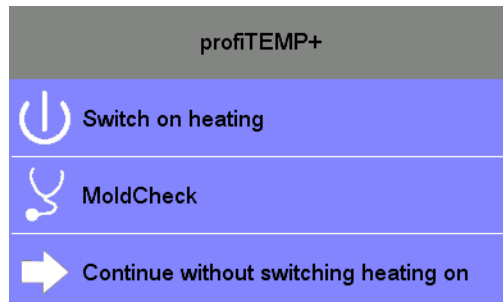
The screenshot displays the Standard view of the hotcontrol cDT+ interface. The main area is a grid of 12 zones, each with three rows of data: temperature in °C, percentage, and current in A. The zones are arranged in a 3x4 grid. The top bar shows the date and time (12.07.17 09:13:53), the view name (1/2 - Standard), and a numerical value (00000000). On the right side, there is a vertical sidebar with various control buttons: Program, Mold Snapshot, Current transfer, Views, Off, Boost, Standby, Logout (admin), and Alarm.

Zone	Temp 1 (°C)	Temp 2 (°C)	%	Current (A)
1 Zone 1	100.0	100.0	7.2	0.2
2 Zone 2	100.1	100.0	8.7	0.2
3 Zone 3	100.0	100.0	12.4	0.2
4 Zone 4	100.0	100.0	7.2	0.2
5 Zone 5	100.0	100.0	8.0	0.2
6 Zone 6	100.0	100.0	10.3	0.2
7 Zone 7	100.0	100.0	10.6	1.0
8 Zone 8	100.0	100.0	10.6	1.0
9 Zone 9	100.0	100.0	10.6	1.0
10 Zone 10	100.0	100.0	10.6	1.0
11 Zone 11	100.0	100.0	10.6	1.0
12 Zone 12	100.0	100.0	10.6	1.0

In the Standard view, the zones are represented with their important characteristics dependent on the zoom level.

#### 4.1.1 Dialog box for switch-on of hot runner controller

Is the parameter  $\nearrow$ [SP17]Query for MoldCheck start (page 193)=ON, a dialog box is shown after switch-on of the hot runner controller (also after activation of the heating by key).



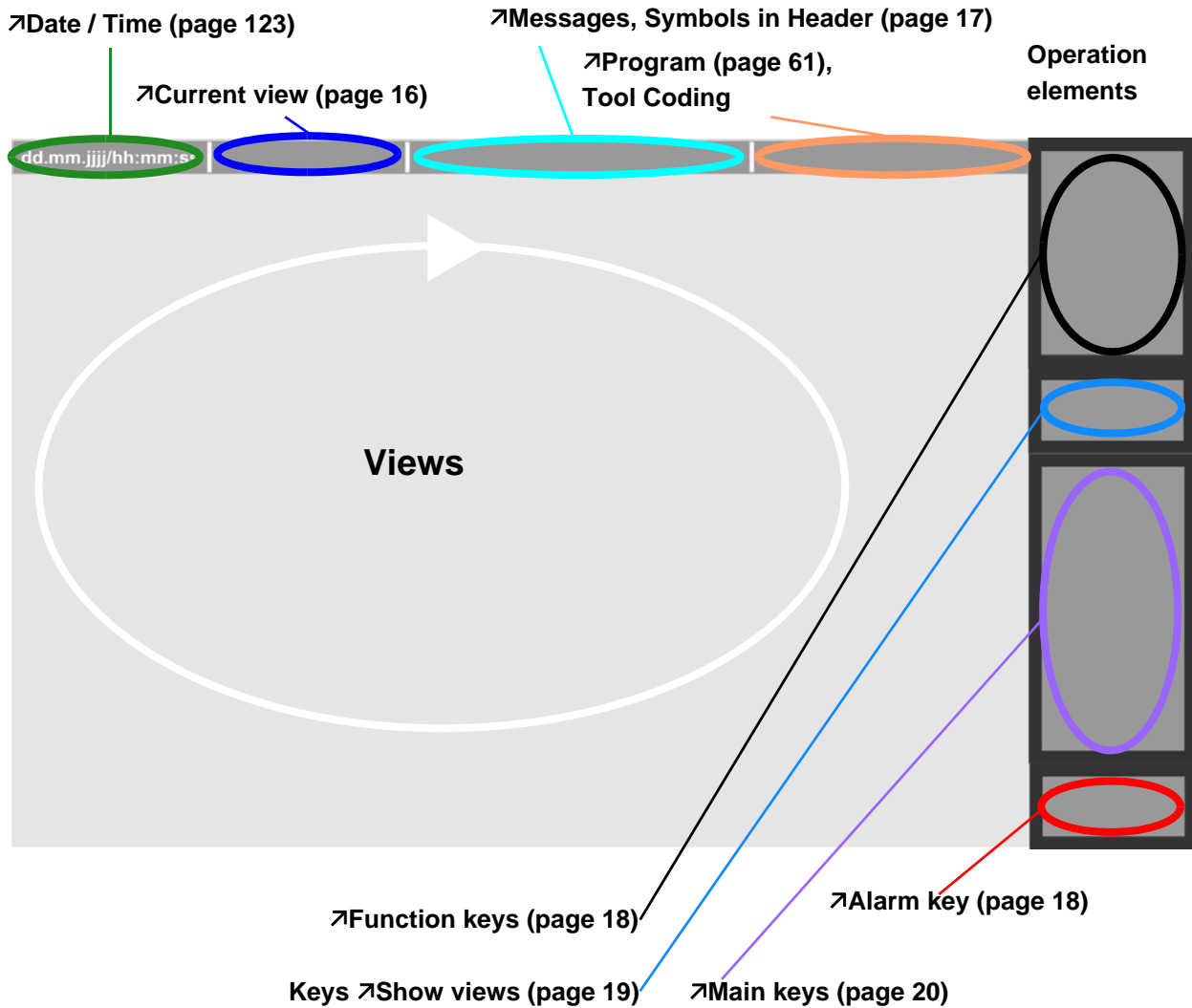
##### Selection

- Switch-on; The heaters are switched-on without any further check
- MoldCheck; call of function see chapter  $\nearrow$ MoldCheck (page 150)
- Quit; Quit this dialog and change to Standard view

## 5 Operation by Control&User Interface - general specification

Overview of displays and operation elements for control&user interface CUI07 of hotcontrol cDT+ dependent on basic display.

### Header



Whether and which keys and views are enabled for the user, see chapter ↗User Administration (page 101).  
 The shown examples are usually for user admin.







The displays/views and operation elements presented are exemplarily, because

- settings by ↗Infocenter (page 89) may have been modified compared to the standard delivery
- other users (not admin) are logged in
- other programs are active
- other current views are shown



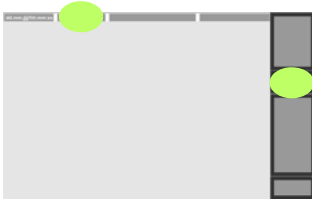
## 5.1 Control&User Interface CUI07 Operation (gestures)

The Control&User Interface CUI07 of hotcontrol cDT+ is operated by Touch-Display.

Tap		<p>Touch screen with your finger</p> <p>The selected key changes colour when the keystroke was accepted as a command.</p>
Wipe down		<p>Touch screen with your finger, pull in one direction and lift finger off the screen</p>
Wipe up		<p>E.g. in header over screen edge to display <math>\nearrow</math>Infocenter (page 89)</p>
Wipe left/right		<p>Touch screen with your finger, pull in one direction and lift finger off the screen</p> <p>E.g. in zone view, to show further zones, when existing</p>
Zoom IN Zoom +		<p>Two fingers are positioned on the screen and moved apart (Pinch open)</p> <p>E.g. zone view for Zoom IN. Thus, a small number of zones is displayed on the screen, but with more details.</p>
Zoom OUT Zoom -		<p>Two fingers are positioned on the screen and moved toward each other (Pinch open)</p> <p>E.g. zone view for Zoom OUT. Thus, a larger number of zones is displayed on the screen, but with less details.</p>

## 5.2 Current view

The current view is selected via key and the view name is displayed in the header .



Views; see chapter ↗Show views (page 19)

The shown arrows indicate, that in the direction of the arrows is more information available. Navigation by see chapter ↗Control&User Interface CUI07 Operation (gestures) (page 15).

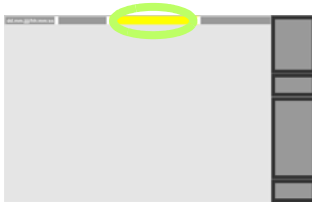
<current page> / <of maximum pages> <Name of view>.



Exemplary display


### 5.3 Messages, Symbols in Header

If at least one message is existing, this is indicated to the user in the header.




Display Infocenter by ↗Wipe down (page 15) in the header over screen edge


The following symbols are additionally displayed in the header in the marked field on the left hand,

- if  CAN-connection between 2 cabinets  
(see chapter ↗Hot Runner Controller overall functions (page 146))


---

- if  **hotcontrol cDT+** by CAN connected, zone numbers are overlapping  
(see chapter ↗Hot Runner Controller overall functions (page 146))


---

- if  control is stopped, e.g. at ↗Software Download Slave (page 112) or if the system scans the HTC-cards.


---

- if  input block is active;  
e.g. if PC with installed own PC software (operation software **TEMPSoft2**) and/or via bus connection to machine control is connected.


---

- if  By this symbol is signalized, that (see chapter) ↗Process Monitoring (page 160) is activated. Activation of function by system parameter ↗[SP07]Process monitoring mode (page 193).

---

- if  By this symbol is signalized, that (see chapter) ↗Pairing Mode (page 135) or interface serial/CAN is activated. Activation of function ↗Pairing Mode (page 135) by system parameter ↗[CP24]Pairing Mode (page 194).

---

- if  By this symbol is signalized, that (see chapter) ↗Pairing Mode (page 135) has detected a problem. Possible reasons see ↗Messages (page 132).

## 5.4 Alarm key

Whether the key Alarm is activated for the user, see chapter ↗User Administration (page 101).



No alarms



By selection of the key, the alarm view is displayed (see chapter ↗Alarms (page 71)).

There are persistent alarms



By selection of the key, the alarm view is displayed (see chapter ↗Alarms (page 71)).

## 5.5 Function keys

Whether and which keys are enabled for the user, see chapter ↗User Administration (page 101)

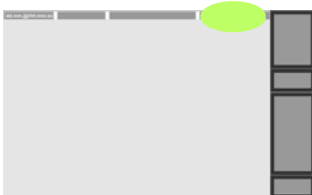


Group



Only if Group view was selected before, see chapter ↗Show views (page 19)

Program



The name of the activated program is displayed in the header. See chapter ↗Program (page 61).

Is tool coding active in **hotcontrol cDT+**, the transferred tool coding (e.g. 00000001) from the connected tool to **hotcontrol cDT+** is visible in the header alternating with the name of the activated program.

MoldSnapshot



See Chapter ↗MoldSnapshot (page 67)

Current transfer



See Chapter ↗Activate current transfer (page 96)

## 5.6 Show views

About the different views (form of representation of the process data, or configuration parameters or functions) the representation of the zones can be changed. Whether and which keys are enabled for the user, see chapter ↗User Administration (page 101)



Standard



See Chapter ↗Standard view (page 34)

Group



See Chapter ↗Group view (page 37)

Table



See Chapter ↗Table view (page 38)

All



See Chapter ↗View All (page 39)

Trend



See Chapter ↗MoldCheck view (page 40)

MoldCheck



See Chapter ↗MoldCheck view (page 40)

At last selected key



Example key Standard view

### 5.7 Main keys

The main keys are permanently available and can be user specific shown / hidden by ↗User Administration (page 101).



Heating ON/OFF



See Chapter ↗Heating ON/OFF (page 22)

Boost



See Chapter ↗Boost (page 24)

Standby



See Chapter ↗Standby (page 26)

Login/Logout



See Chapter ↗Login/Logout (page 27)

### 5.8 Color of key

At last selected key is displayed in yellow (exception: ↗Function keys (page 18), ↗Main keys (page 20))

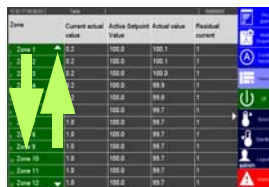
The selected key changes shortly colour to green when the key-stroke was accepted as a command.



Example key Standard view

### 5.9 Scroll

If more information is existing than represented in the view, e.g. parameters, zones, in tables, etc., wipe in the direction of this information for further information.



Further zones



Further parameters

Example table view



### 5.10 Pinyin




When using Chinese as a third language, Pinyin (conversion of the Latin alphabet to Chinese characters) is used. An extended keyboard is used to enter the Latin transcription. From the keypad embedded over the normal keys, the Chinese characters can be selected by using the arrow keys (left / right). (The entry of password for Login/ Logout (page 27) is via standard keyboard)

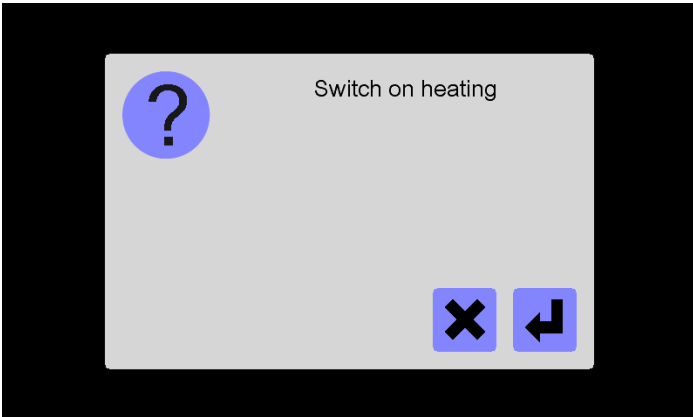


<p>1. For Example input of Latin letter "a"</p> <p>2. Selection of symbol from keypad</p> <p>Further characters for "a" by left / right arrow keys</p>	
Inputs under 1.	Show the following symbols in keypad (2.)
a	阿啊呵腌吖铜嘎
ai	哀挨埃唉哎捩犍癌皑矮藹霭暧爱碍艾隘暖曖嗑媛砣
...	...
zun	尊遵樽罇樽
zuo	作喂昨琢笮左佐撮做坐座凿柞柞柞啞柞酢



## 6 Main keys

### 6.1 Heating ON/OFF

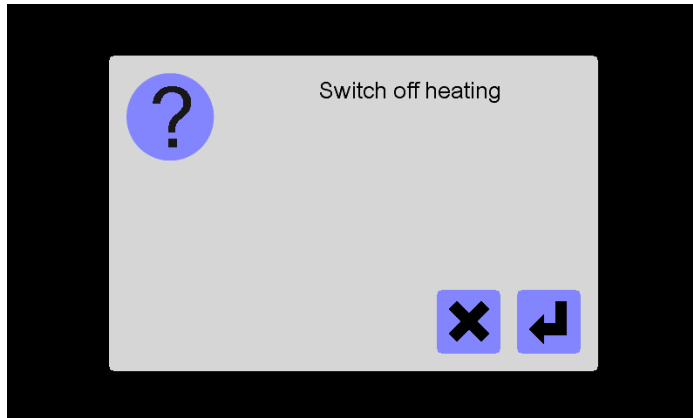
<p><b>Description</b></p> 	<p>For all zones not deactivated by parameter ↗[P006]Zone (page 191) an actuating signal is output and alarms are generated.</p>
<p><b>How it works</b></p>	<p>Call by key.</p>
<p><b>Setting by</b></p>	<p>↗Main keys (page 20) ↗[P006]Zone (page 191) ↗[SP17]Query for MoldCheck start (page 193)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p>

	 <p>Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)</p>	 <p>Press key</p>
---	---	---

	<p>The heating is switched on for all zones (parameter ↗[P006]Zone (page 191) = ON).</p>  <p>Reject</p>  <p>Confirm</p>
---	---

	<p>After switch-on of the hot runner controller and/or after activation of the heating by key a dialog box can be shown. Details see parameter ↗[SP17]Query for MoldCheck start (page 193) and chapter ↗Dialog box for switch-on of hot runner controller (page 13)</p>
 <p>Is the heating on, is this signaled by the green color in the key.</p>	





The heating is deactivated.



Reject








Confirm

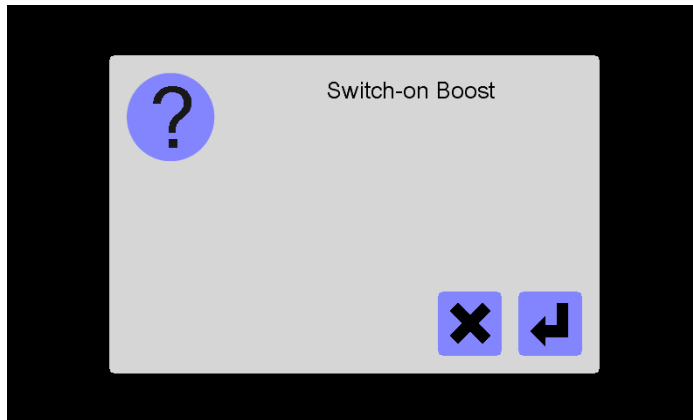


After a successful executed identification for one zone, it is restarted after ↗Heating ON/OFF (page 22), if the start conditions for the identification are fulfilled, i.e.

- zone was passivated and is activated (see parameter ↗[P006]Zone (page 191))
- in between the setpoint value was set to „0“ (see parameter ↗[P001]Setpoint value (page 191))
- the actual value shows no sensor break.

## 6.2 Boost

<p><b>Description</b></p> 	<p>In Boost mode, the setpoint values are increased e.g. to heat nozzles for a short time after downtimes and to guarantee a smooth production start.</p>
<p><b>How it works</b></p>	<p>The Boost mode can be used in two situations.</p> <p>In the first case the Boost mode is started during operation at the push of the button. The setpoint values of the zones are increased by a freely selectable temperature value. Additionally a time period can be set, after which the Boost mode is automatically ended, otherwise the Boost mode is ended per push of the button. The function can also be activated by a digital input e.g. from the injection molding machine.</p> <p>In the second case the Boost mode follows the heating-up. After the start-up time has elapsed, the zones are increased by a freely selectable temperature value. This workflow provides the operator at automated heating-up processes, because no manual interaction is necessary.</p>
<p><b>What good is it</b></p>	<p>The Boost mode provides the operator at start-up and production start and is labor-saving.</p>
<p><b>Setting by</b></p>	<p>↗Main keys (page 20)          ↗[SP08]Boost (page 193)          ↗[P008]Boost setpoint value (page 191)          ↗[P017]Boost time at start-up mode (page 191)          ↗[P018]Boost time (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p>
	<div style="background-color: #90EE90; padding: 10px;">  Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)         </div> <div style="display: flex; align-items: center; margin-top: 10px;">  <span>Press key</span> </div>



After activation of the Boost function, all zones are increased by the setpoint value under parameter  $\nearrow$ [P008]Boost setpoint value (page 191) for the time set under parameter  $\nearrow$ [P018]Boost time (page 191).



Reject



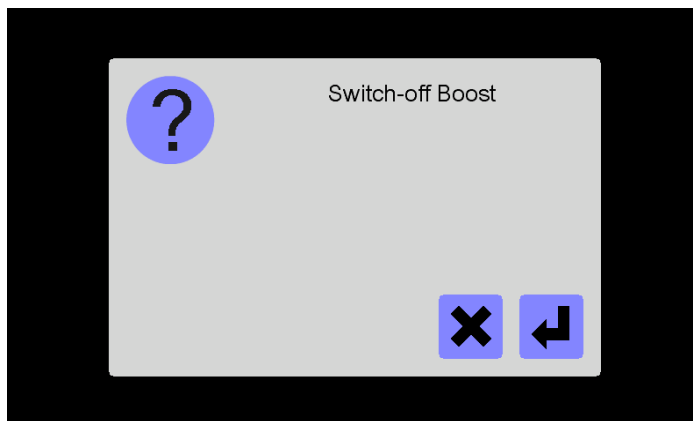
Confirm

In the first line (actual value) of the zone display, the display of the text alternates with the display of the current value (see chapter  $\nearrow$ Alarms (page 74)).

In the second line (setpoint value) of the zone display the elapsing timer is shown (see parameter  $\nearrow$ [P017]Boost time at start-up mode (page 191)).



Boost function active is signaled by the green color in the key.



After deactivation of the Boost function and/or after expiration of the time set, all zones are controlled by the setpoint value set.






Reject





Confirm

### 6.3 Standby

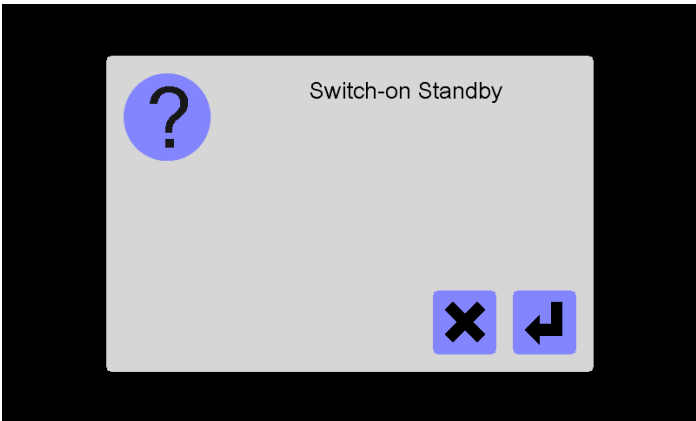
<p><b>Description</b></p> 	<p>In Standby mode the setpoint values are reduced, because e.g. in production breaks it makes sense, to reduce the temperature level of the hot runner.</p>
<p><b>How it works</b></p>	<p>At operation the Standby mode is started and ended at the push of the button. The setpoint values of the zones are reduced by a freely selectable temperature value. Alternatively the function can also be activated by a digital input e.g. from the injection molding machine.</p>
<p><b>What good is it</b></p>	<p>Energy is saved and the plastic, located in the cavities, is not thermally damaged.</p>
<p><b>Setting by</b></p>	<p>↗Main keys (page 20) ↗[SP09]Standby (page 193) ↗[SP11]Auto Standby Time (page 193) ↗[P007]Standby setpoint value (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p>





 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)


 Press key

After activation of the Standby function, all zones are reduced by the setpoint value under parameter ↗[P007]Standby setpoint value (page 191).

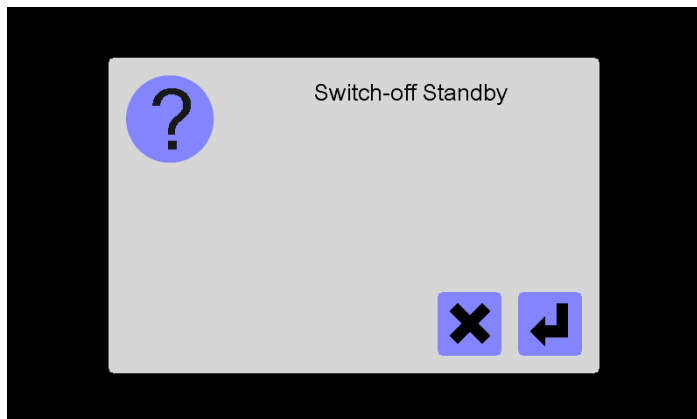


 Reject  
  
 Confirm

In the first line of the zone display, the display of the text alternates with the display of the current value (see chapter ↗Alarms (page 74)).




Standby function active is signaled by the green color in the key.






After deactivation of the Standby function, all zones are controlled by the setpoint value set.



## 6.4 Login/Logout

<p><b>Description</b></p> 	<p>Unauthorized input on the hot runner controller is prevented by a comfortable user administration. There are 3 different users in the hot runner controller. The user Standard and the user prof (see chapter ↗Standard Operation (page 29)) have adapted access rights. The existing system administrator (user admin) has all access rights to the system. The user prof and the user admin are only activated after login.</p>
<p><b>How it works</b></p>	<p>After start of the hot runner controller, the profile of the standard user is activated. The standard user is always active, if no other user is logged into the system. Which user (prof, admin) Which user is currently logged in, can be identified by the key symbol for login.is currently logged in, can be identified by the key symbol for login. By a login other users are activated and/or deactivated after logout.</p>
<p><b>What good is it</b></p>	<p>By ↗User Administration (page 101) and ↗Login/Logout (page 27) the hot runner controller may be individually adapted at any time in terms of the enabled function scope, faulty insertions are prevented.</p>
<p><b>Setting by</b></p>	<p>↗Main keys (page 20)</p>

	<p>The standard passwords should be changed after start-up of the system by the system administrator (see chapter ↗Change password (page 105)). Directly after start-up, the system administrator admin should check the access rights of the standard user. The standard user should be always the user who has the least rights in the system.</p>
	<p>In addition to the entry of the password by user, by ↗USB support (page 148) there exist a comfortable, because automated Login procedure. A once saved key, on USB stick, with password, can be used for all <b>hotcontrol cDT+</b> hot runner controllers with the same password. The key is tied for safety to the USB stick. A copy of the key on another drive, makes the key invalid. The key must be created for each USB stick (see chapter ↗Generate USB key (page 107)).</p>
	<p>Default setting User prof - Standard password: prof User admin - Standard password: admin</p>



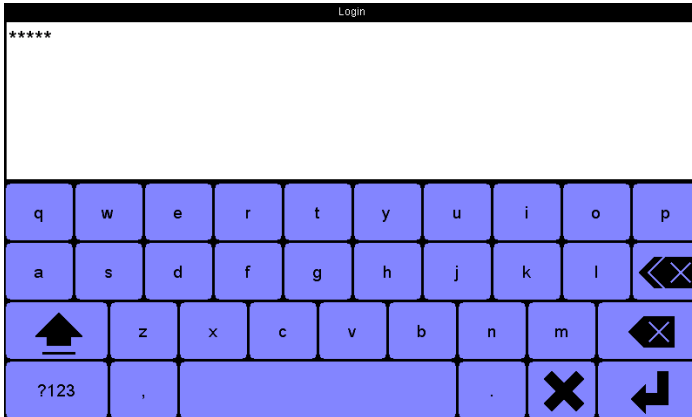
**i** Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Press key



Standard User is active.



Enter password using the visual keyboard. (Each entered character is prompted as \*)



Reject



Confirm

Is a user logged in, can this be seen in the key symbol Login.

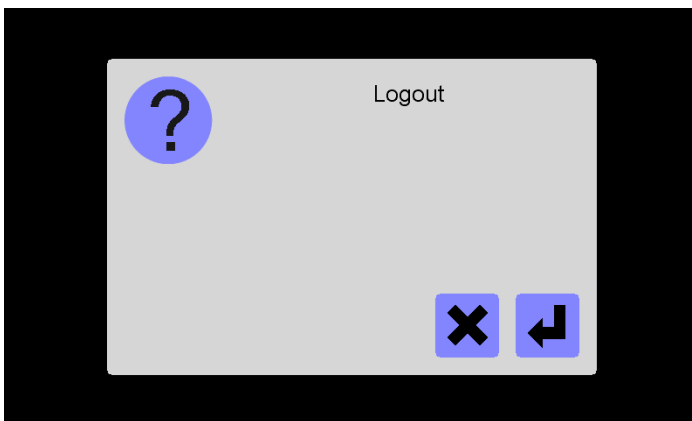


User admin logged in



User prof logged in

A logged in user is logged off again after selection of the key symbol Login and confirmation.



Reject



Confirm



Standard passwords see chapter ↗Change password (page 105).

In case the password for user prof and/or user admin is unknown, see chapter ↗Reset password (page 147).




If no operation is performed on the device for 10 minutes, the currently logged-on user is automatically logged out. The Standard user is reactivated by this. ↗Standard view (page 34) is displayed.

## 7 Standard Operation



To achieve an absolute process security, unauthorized input on the device is prevented by a comfortable ↗User Administration (page 101).

In **hotcontrol cDT+** exist three user levels where individual functions and parameters can be activated / deactivated.

Which user (prof, admin) Which user is currently logged in, can be identified by the key symbol for login. is currently logged in, can be identified by the key symbol for login.

	Standard operation; Standard user without password
	Professional operation; user prof with freely selectable password
	System administrator operation; user admin with freely selectable password

Not all parameters, views and functions are available for Standard user without login. An overview you can find in chapter ↗Delivery Status Standard (page 191).

	For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b> .
	In delivery status available parameters, views, functions etc. see chapter ↗Delivery Status Standard (page 191).

When the Standard user wants to access other (user prof) and/or all (user admin) parameters, views, functions, he must log in (see chapter ↗Login/Logout (page 27)), and/or activate/deactivate parameters, views, functions by ↗User Administration (page 101).

## 7.1 Change of setpoint value / Change of parameters



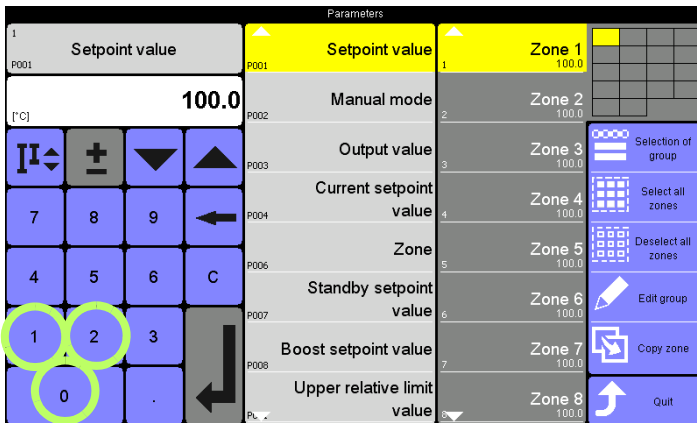
Whether and which keys are enabled for the user, see chapter 7 User Administration (page 101)



By 7Tap (page 15) in zone display input dialog



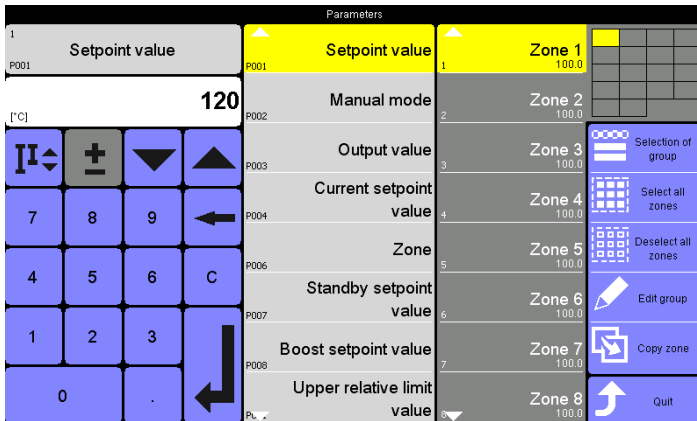
Select zone  
Example zone 1



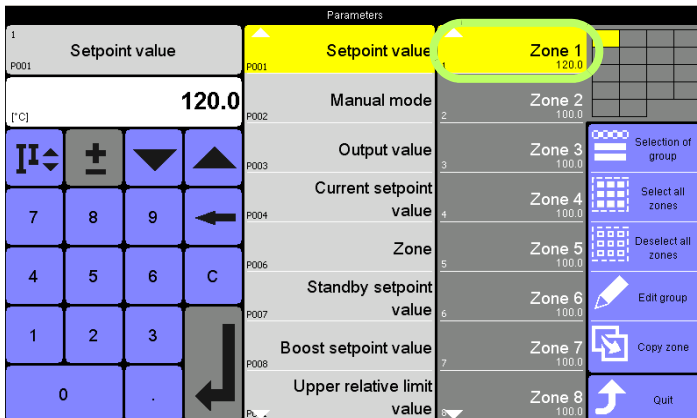
Select parameter  
Example [P001]



By the displayed numeric keypad the specification of the new value for the selected parameter field can be done.  
Example 120



Confirm entry



Setpoint value change executed  
Quit dialog



Further information see chapter 7 Input dialog zones (page 46)



## 7.2 Change output value / Activate manual mode



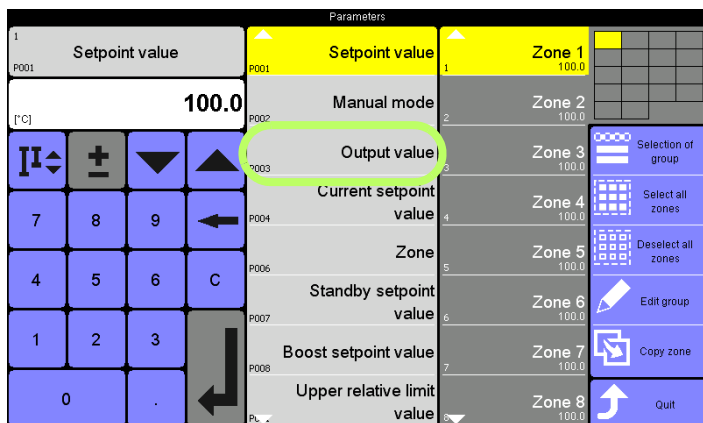
Whether and which keys are enabled for the user, see chapter ↗User Administration (page 101)



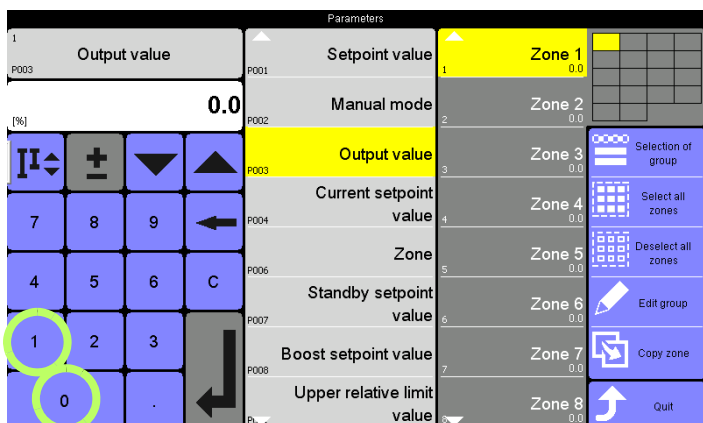
By ↗Tap (page 15) in zone display input dialog



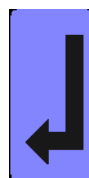
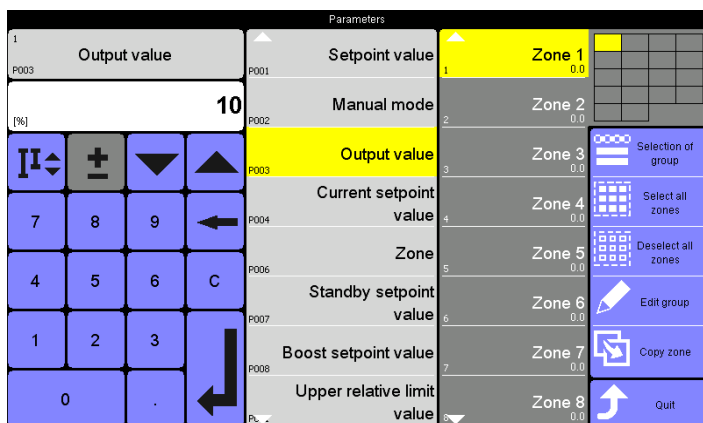
Select zone  
Example zone 1



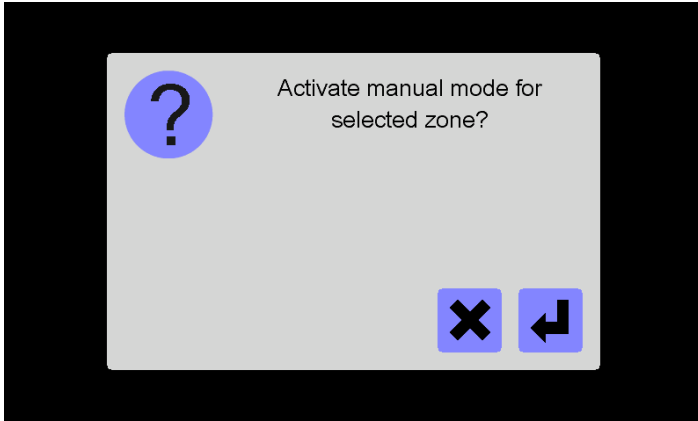
Select parameter  
Example [P003]



By the displayed numeric keypad the specification of the new value for the selected parameter field can be done.  
Example 10

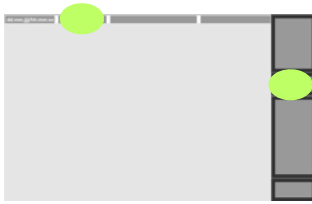


Confirm entry



Further information see chapter 7 Input dialog zones (page 46)

## 8 Views



Show views

**hotcontrol cDT+** in total has 6 different representation forms for the display of zones.

- ↗Standard view (page 34)
- ↗Group view (page 37)
- ↗Table view (page 38)
- ↗View All (page 39)
- ↗MoldCheck view (page 40)
- ↗Trend view (page 42)

and ↗View Alarm (page 41).

On the one hand, this offers the possibility to view zones in an individual favorite view, on the other hand enables very convenient operation, depending on the application.

Change can be implemented as desired between the individual representation types.

### Change setting

#### Information Center

The activated and therefore operable views for the user are assigned by ↗User Administration (page 101).

## 8.1 Standard view



In the Standard view, the zones are represented with their important characteristics dependent on the zoom level. The smaller the zoom level, the more details are shown and vice versa.

12.07.17 09:13:53		1/2 - Standard		00000000		Program	
1	<b>Zone 1</b>	2	<b>Zone 2</b>	3	<b>Zone 3</b>	4	<b>Zone 4</b>
	100.0 °C		100.1 °C		100.0 °C		100.0 °C
	100.0 °C		100.0 °C		100.0 °C		100.0 °C
	7.2 %		8.7 %		12.4 %		7.2 %
	0.2 A		0.2 A		0.2 A		0.2 A
5	<b>Zone 5</b>	6	<b>Zone 6</b>	7	<b>Zone 7</b>	8	<b>Zone 8</b>
	100.0 °C		100.0 °C		100.0 °C		100.0 °C
	100.0 °C		100.0 °C		100.0 °C		100.0 °C
	8.0 %		10.3 %		10.6 %		10.6 %
	0.2 A		0.2 A		1.0 A		1.0 A
9	<b>Zone 9</b>	10	<b>Zone 10</b>	11	<b>Zone 11</b>	12	<b>Zone 12</b>
	100.0 °C		100.0 °C		100.0 °C		100.0 °C
	100.0 °C		100.0 °C		100.0 °C		100.0 °C
	10.6 %		10.6 %		10.6 %		10.6 %
	1.0 A		1.0 A		1.0 A		1.0 A

Views
Off
Boost
Standby
Logout
admin
Alarm

Exemplary display | User admin

**Change of view**  
see chapter ↗Show views (page 19);



Zoom IN

Zoom OUT

See Chapter ↗Scroll (page 20)

Scroll

**Direct selection of zone** see chapter ↗Input dialog zones (page 46)



### 8.1.1 Zoom level

There exist 4 zoom levels. The smaller the zoom level, the more details are shown and vice versa.

**Largest** zoom level at 6, 12, 18 zones

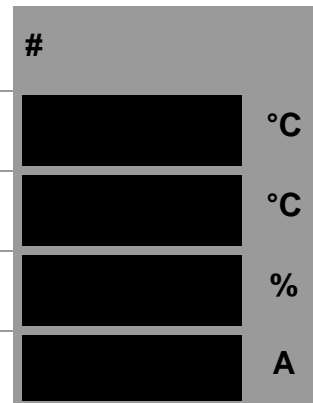
Zone number # (as footnote down left) and zone name in the top field

Actual value °C<sub>0)</sub> alternately with ↗Messages - Alarms, Status, Functions (page 73)<sub>1)</sub>

Setpoint value °C<sub>0)</sub>

Output value %

Heating current A (or Heating power W see chapter ↗Ampere / Watt (page 94))



Schematic presentation Zone

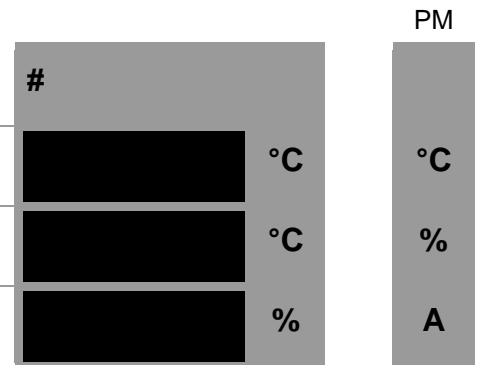
**Medium** zoom level at 24 zones

Zone number # (as footnote down left) and zone name in the top field

Actual value °C<sub>0)</sub> alternately with ↗Messages - Alarms, Status, Functions (page 73)<sub>1)</sub>

Setpoint value °C<sub>0)</sub>

Output value %



Schematic presentation Zone

**Smallest** zoom level at 30, 36, 42, 48 zones

Zone number # (as footnote down left) and zone name in the top field

Actual value °C<sub>0)</sub> alternately with ↗Messages - Alarms, Status, Functions (page 73)<sub>1)</sub>

Setpoint value °C<sub>0)</sub>



Schematic presentation Zone

**Mini** zoom level at >= 64 Zones

Zone number # (as footnote down left) and zone name in the top field

Actual value °C<sub>0)</sub> alternately with ↗Messages - Alarms, Status, Functions (page 73)<sub>1)</sub>



Schematic presentation Zone

**Mini** zoom level at Pairing-Mode-actuator (= PM)

Zone number #; actual value °C<sub>0)</sub> alternately with ↗Messages - Alarms, Status, Functions (page 73)<sub>1)</sub>



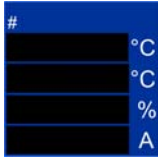
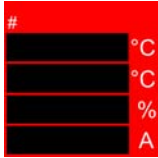
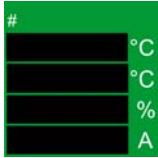
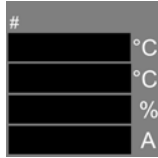
Schematic presentation Zone


0) dependant on temperature unit °C/°F

1) provided that at least one a is persistent for the zone

### 8.1.2 Colour coding for zone

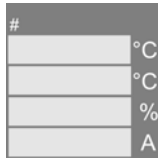
Temperature and status of the zones is identified by colour.

 <p>Actual value lies below the tolerance range around the setpoint value.</p>	 <p>Actual value lies above the tolerance range around the setpoint value. Or: For the zone a particular alarm is existing (see chapter ↗Messages - Alarms, Status, Functions (page 73)).</p>	 <p>Actual value lies within the tolerance range around the setpoint value.</p>	 <p>Zone is passive/off.</p>
			<p>↗[P006]Zone (page 191)</p>



Display of zones in Hot runner controller#Pairing-Mode-actuator, when MoldCheck is running.  
Display of text MCK alternating with actual value.

See chapter / parameters  
 ↗MoldCheck (page 150)  
 ↗Pairing Mode (page 135)  
 ↗[CP24]Pairing Mode (page 194)



The passive zones are dimmed.  
There were no values displayed.

↗[SP14]Passive zones present dimmed (page 193)

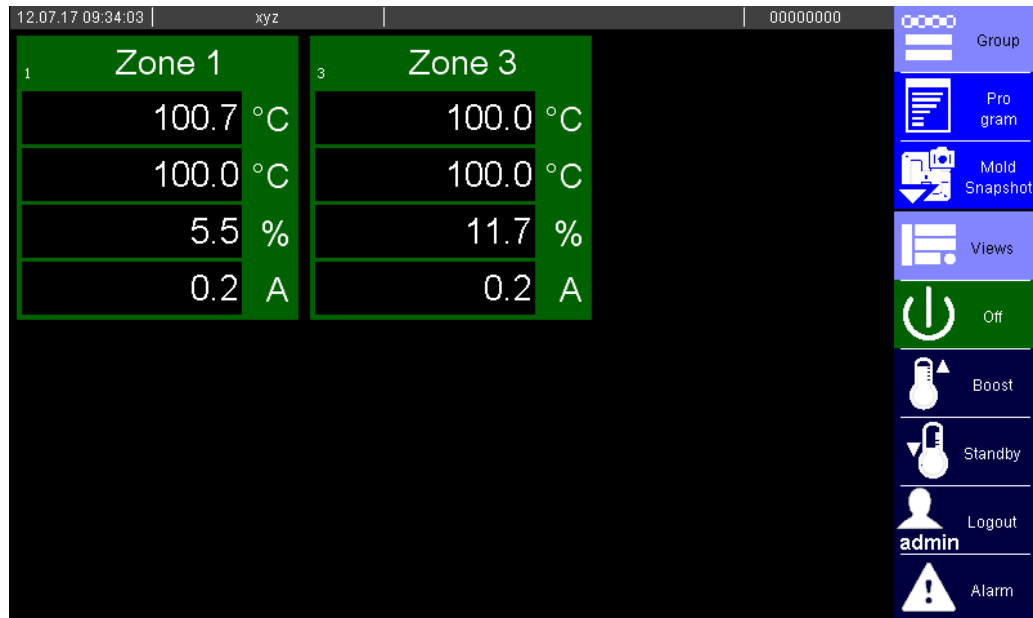
## 8.2 Group view



In the group view are grouped zones displayed, selectable by the group name from the user.

For details see chapter ↗Zone selection keys [D] (page 50) and ↗Edit group (page 52).

Pressing the GROUP key displays the defined groups in a list to choose from. The first defined group is always displayed, as shown.



Group xyz, Zone 1&3 | User admin

Selection of zone see chapter ↗Input dialog zones (page 46)



See Chapter ↗Scroll (page 20)

### 8.3 Table view



In the table view the status (selectable from the following items)

- Current actual value
- Current actual value
- Actual value
- Residual current
- Current process monitoring operating point

and the parameters (selectable out of all parameters of the hot runner controller) of all zones are displayed. The settings in table are valid for the whole hot runner controller.

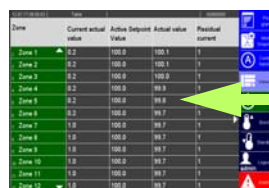
Zone		Current actual value	Active Setpoint Value	Actual value	Residual current
1	Zone 1 ▲	0.2	100.0	100.1	1
2	Zone 2	0.2	100.0	100.1	1
3	Zone 3	0.2	100.0	100.0	1
4	Zone 4	0.2	100.0	99.9	1
5	Zone 5	0.2	100.0	99.8	1
6	Zone 6	0.2	100.0	99.7	1
7	Zone 7	1.0	100.0	99.7	1
8	Zone 8	1.0	100.0	99.7	1
9	Zone 9	1.0	100.0	99.7	1
10	Zone 10	1.0	100.0	99.7	1
11	Zone 11	1.0	100.0	99.7	1
12	Zone 12 ▼	1.0	100.0	99.7	1

All zones, all table content selected | user admin

Dependent on configuration, see chapter ↗Configure table view (page 109) status and/or parameter are displayed in the table view here.

Navigation in the table view in column zones by see chapter ↗Scroll (page 20)

**Selection of zone from column parameter [P001] see chapter ↗Input dialog zones (page 46)**



From P001

**See Chapter ↗Scroll (page 20)**



## 8.4 View All







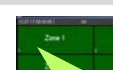
In the view All one achieves a general overview of the control performance of the temperature control of the Hot Runner (with regulation difference).

In this view all zones are represented on a screen page with a clear and easily visible Good/Bad information item in the form of a color underlay of the zone.



Exemplary display | User admin

### Color of the zone

	Actual value lies within the tolerance range around the setpoint value.
	Actual value lies below the tolerance range around the setpoint value.
	Actual value lies above the tolerance range around the setpoint value.
	For the zone an alarm is existing (see chapter Messages - Alarms, Status, Functions (page 73)).
	Zone is passive/off.

Selection of zone see chapter Input dialog zones (page 46)



### 8.5 MoldCheck view



In the MoldCheck view a complete diagnosis of electric conditions of the Hot Runner and the corresponding peripherals is displayed.

For details see chapter 7 MoldCheck (page 150).

12.07.17 09:41:18   MoldCheck   00000000			Start
1	Zone 1	Zone 2	Status
2	Zone 3		
4	Zone 4	Zone 5	Error
5	Zone 6		
7	Zone 7	Zone 8	On
8	Zone 9		
10	Zone 10	Zone 11	Boost
11	Zone 12		
13	Zone 13	Zone 14	Standby
14	Zone 15		
16	Zone 16	Zone 17	Logout admin
17	Zone 18		
18			Alarm

Exemplary display | User admin

## 8.6 View Alarm



**hotcontrol cDT+** monitors the control process continuously. Alarms are output, when there is a deviation from the normal status, e.g. at limit value violation or a fault in the hardware. In the view Alarm all alarms for all zones are displayed.

For details see chapter ↗Alarms (page 71) and chapter ↗Messages - Alarms, Status, Functions (page 73).



Exemplary display | User admin

Selection of zone see chapter ↗Alarms (page 71)



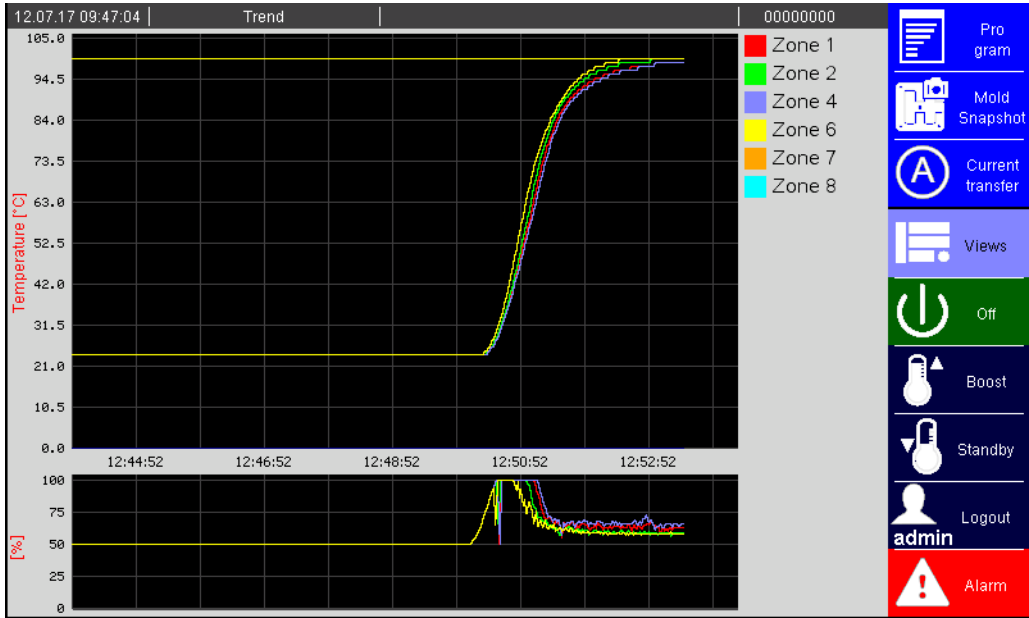
See Chapter ↗Scroll (page 20)

### 8.7 Trend view



In the trend view, the actual value, the setpoint value and the output value are displayed for maximum 6 selectable zones.

For details see chapter ↗Trend settings (page 43).



Zone 1, 2, 4, 6, 7, 8 | User admin

See Chapter ↗Trend settings (page 43)





Select zones




Change trend scaling

### 8.7.1 Trend settings

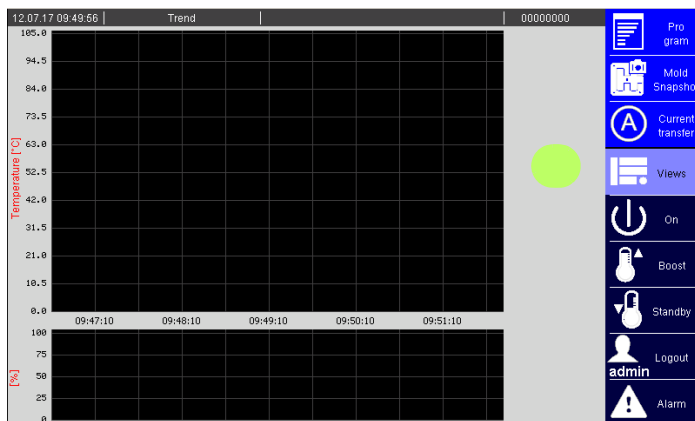
<p><b>Description</b></p> 	<p>The graph in form of a trend is recorded for setpoint value, actual value and output value of each zone. In the trend up to 6 zones are displayed simultaneously to the user.</p>
<p><b>How it works</b></p>	<p>The data is recorded for all zones of the active Hot Runner Controller. The data is stored in a circular buffer. This provides a data capacity for all zones of 20 minutes each. With filled circular buffer in data recording, the oldest data will be overwritten.</p>
<p><b>What good is it</b></p>	<p>The course of the values is recorded and can be analyzed easily.</p>
<p><b>Setting by</b></p>	<p>↗Trend view (page 42)</p>





**i** Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Show trend

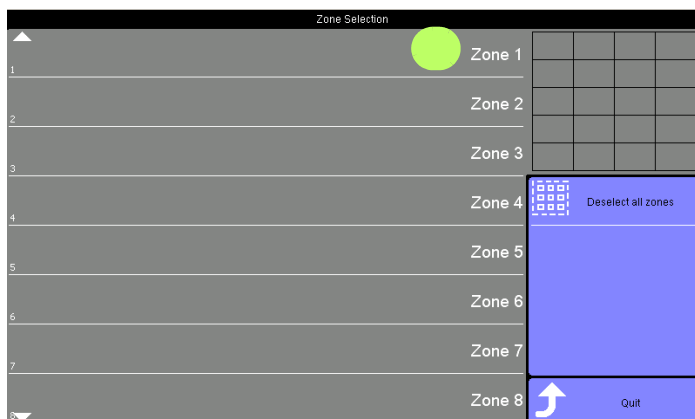


 In the basic state, the trend curves are not displayed. First zones must be selected for display.



For zone selection choose zone field.

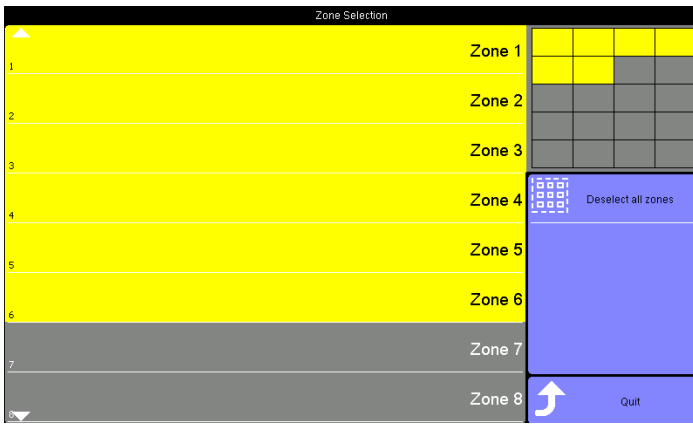
To get to ↗Input dialog zones (page 46), select drawing area of trend. Always the first zone is shown as selected.



 Select zones



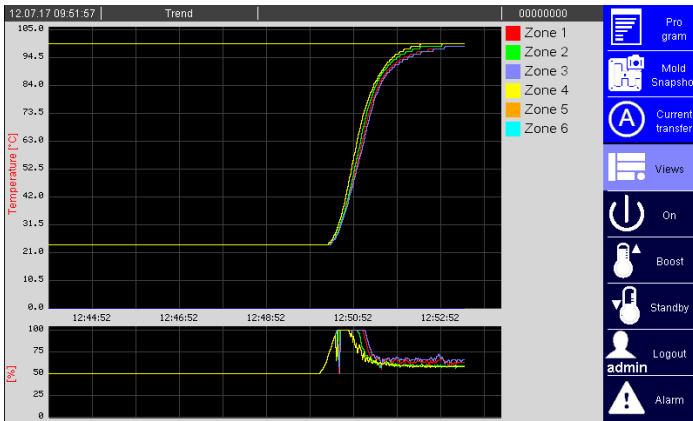
Maximum 6 zones are simultaneously selectable



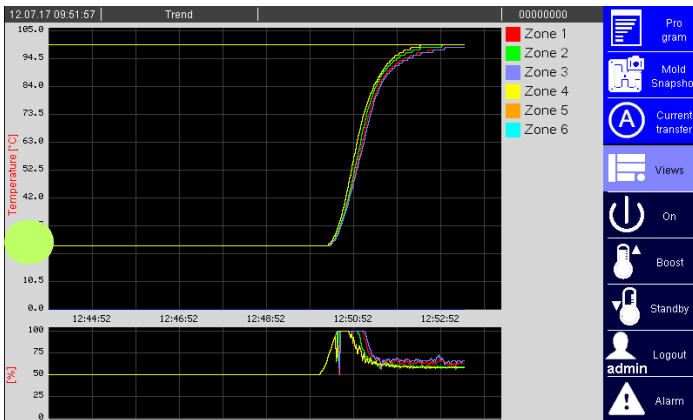
The zones (here: zone 1-6) are individually selected.



Confirm, quit dialog



In the upper area, the actual value and the setpoint value, and in the lower area the output value of the selected zones are displayed.



Change trend scaling

Select Y-axis

Setting of Y-axis for setpoint value, actual value by [A] temperature start and temperature end.

Setting of Y-axis for output value by [B] output value start and output value end.

Setting of X-axis by [C] for time.



Confirm each setting



Adjustment range

Temperature start / temperature end between 0 -1000 (start < end)


Output value 0-100


Time 5 | 10 | 15 | 20 minutes. As soon as the time scale is changed and the trend is displayed again, the starting point of the trend is shown in the middle of the time scale.



Quit dialog

## 9 Input dialog zones

<p><b>Description</b></p> 	<p>By the input dialog zones are selected and parameters may be specified for selected zones.</p>
<p><b>How it works</b></p>	<p>Enter input dialog by selection of any zone in the views (↗Standard view (page 34), ↗Group view (page 37), ↗Table view (page 38), ↗View All (page 39). In the dialog further zones [E] can be added to the already existing selection. The selected zones are marked in the field [E] in yellow and in the zone selection overview field [F] symbolized with yellow rectangles. After selection of one parameter [A] the value of the parameter can be changed by the displayed numeric keypad [C] for all selected zones [F]. Confirmation input by ENTER key and assume it to all selected zones.</p>
<p><b>What good is it</b></p>	<p>Operation of device</p>
<p><b>Setting by</b></p>	<p>View ↗Input dialog zones (page 46)</p>

 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



By ↗Tap (page 15) in zone display input dialog



Example zone 1

[A] ↗Parameter list [A] (page 47)

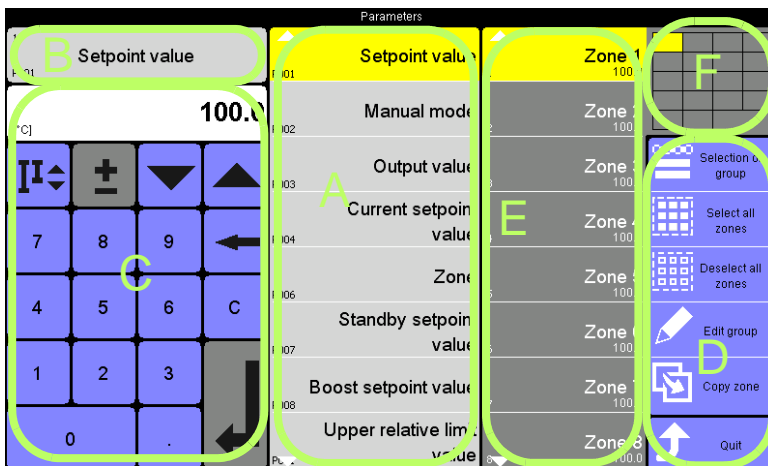
[B] The selected parameter out of the system parameter list is displayed in the ↗Parameter-Field [B] (page 48) upper left.


[C] By the displayed ↗Numeric keypad [C] (page 49) the specification of the new value for the selected parameter field can be done.

[D] ↗Zone selection keys [D] (page 50)

[E] ↗DIRECT zone selection [E] (page 58)

[F] ↗Zone Selection Overview [F] (page 60)




 The first displayed zone in ↗Input dialog zones (page 46) is always the zone selected.

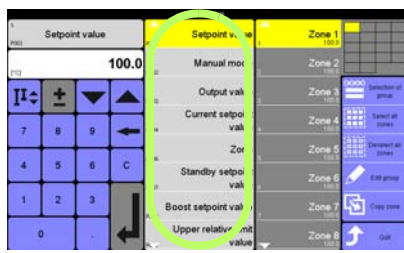



Quit dialog



### 9.1 Parameter list [A]

<p><b>Description</b></p> 	<p>All parameters of a zone, that are visible and therefore operable for the user (see chapter ↗User Administration (page 101)) are shown in the input dialog. The parameters are listed by designation / characteristic analog and their parameter name (example ↗[P001]Setpoint value (page 191)). The list is circulating. When the parameter list is exited and re-entered, the last selected parameter appears.</p>
<p><b>How it works</b></p>	<p>The parameters can be selected and changed for the selected zones. The entry is done by ↗Numeric keypad [C] (page 49).</p>
<p><b>What good is it</b></p>	<p>Zone dependent input entered in uniform dialog.</p>
<p><b>Setting by</b></p>	<p>↗Parameter list [A] (page 47) in ↗Input dialog zones (page 46)</p>



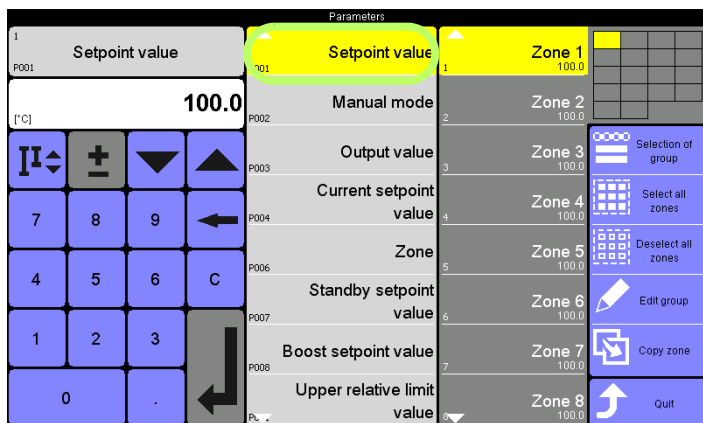
 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



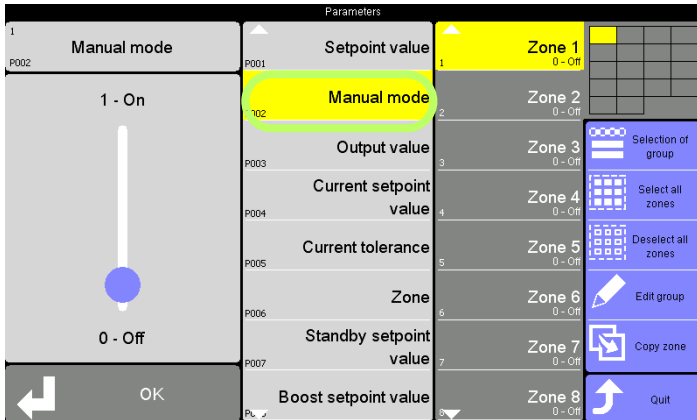
By ↗Tap (page 15) displayed in zone



Example zone 1



Parameters ↗[P001]Setpoint value (page 191)



Parameter ↗[P002]Manual mode (page 191) etc.



The entry in ↗Input dialog zones (page 46) is always by selected zone.

For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

## 9.2 Parameter-Field [B]

### Description



The selected parameter in ↗Parameter list [A] (page 47) is displayed in ↗Parameter-Field [B] (page 48) upper left. The designation / characteristic analog is displayed, as well as the number of the zone that is currently shown in this field.

### How it works

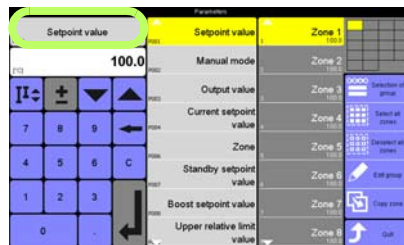
From ↗Numeric keypad [C] (page 49) the selected parameter from ↗Parameter list [A] (page 47) is displayed.

### What good is it


Zone dependent input entered in uniform dialog.

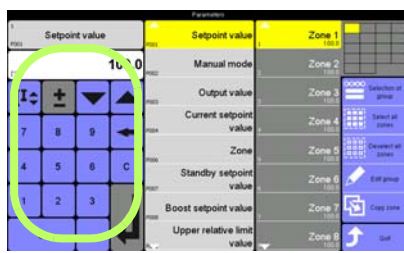
### Setting by

↗Parameter-Field [B] (page 48) in ↗Input dialog zones (page 46)



### 9.3 Numeric keypad [C]

<p><b>Description</b></p> 	<p>By the numeric keypad</p> <ul style="list-style-type: none"> <li>Numerical value</li> <li>Status</li> <li>Texts</li> </ul> <p>for parameters can be specified. If the parameter has a unit, it is shown here.</p>
<p><b>How it works</b></p>	<p>Select numeric keypad by tap.</p>
<p><b>What good is it</b></p>	<p>Zone dependent input entered in uniform dialog. The dialog adapts its look on the parameter to change.</p>
<p><b>Setting by</b></p>	<p>➤ Numeric keypad [C] (page 49) in ➤ Input dialog zones (page 46)</p>



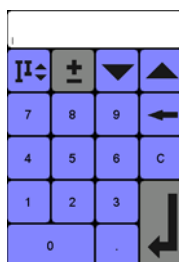
#### Numerical value



Increase value by key



Decrease value by key



#### Absolute

Current numerical value: 100;  
Entered numerical value 50;  
After confirmation numerical value: 50;

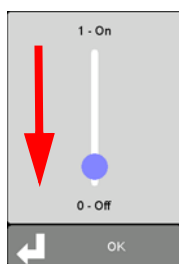


#### Relative

Current numerical value: 100;  
Entered numerical value 50;  
After confirmation numerical value: 150;

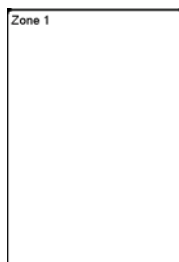


#### Status



Change status by moving the sliding switch (here from ON to OFF) or by selection of the status.

#### Text




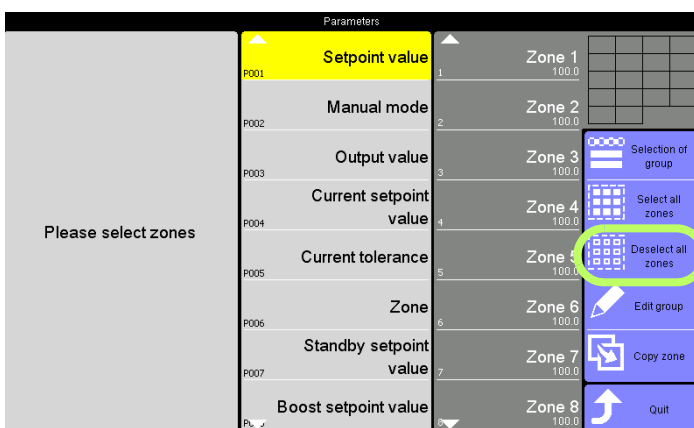
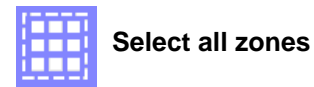
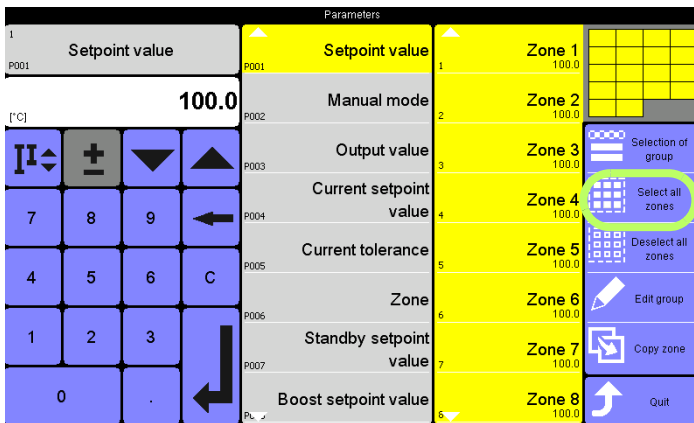
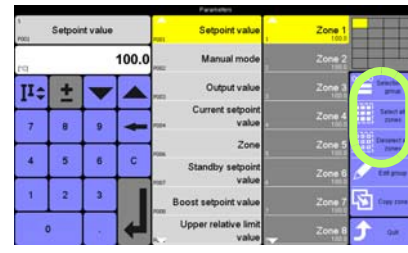
Change text by selection of the text.  
Enter a text using the visual keyboard.

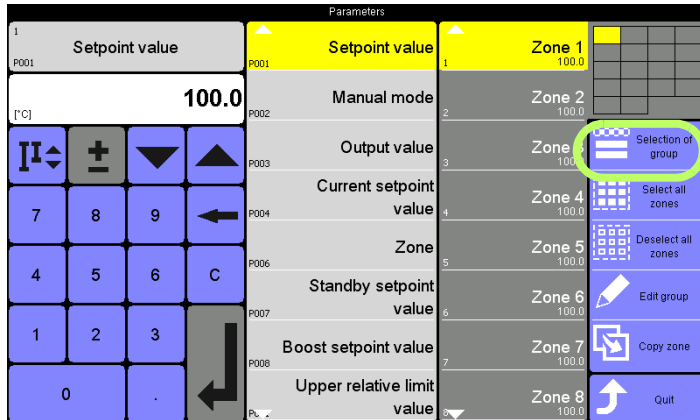


Always confirm change

### 9.4 Zone selection keys [D]

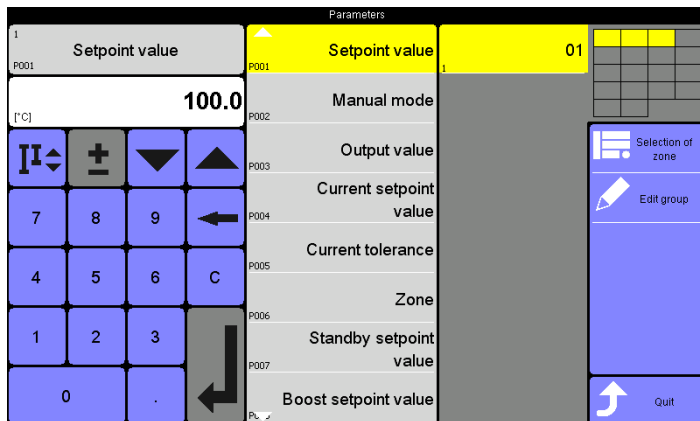
<p><b>Description</b></p> 	<p>By the zone selection keys</p> <ul style="list-style-type: none"> <li>■ Select all zones</li> <li>■ Deselect all zones</li> <li>■ Selection of group</li> </ul> <p>the zones are selected.</p>
<p><b>How it works</b></p>	<p>Select zone selection keys by tap.</p>
<p><b>What good is it</b></p>	<p>Zone dependent input entered in uniform dialog.</p>
<p><b>Setting by</b></p>	<p>↗Zone selection keys [D] (page 50) in ↗Input dialog zones (page 46)</p>





### Selection of group

(Is no group defined, see chapter ↗Edit group (page 52))



Is exactly 1 group defined (here: 01 with Zone 1-3), this is taken for selection.




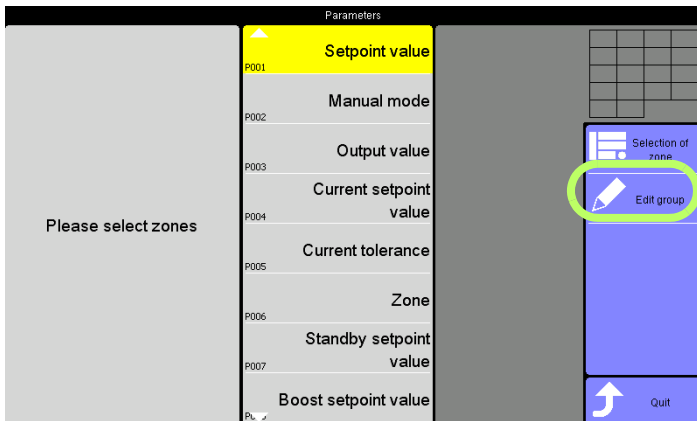
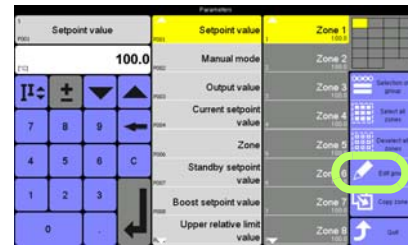
Quit dialog




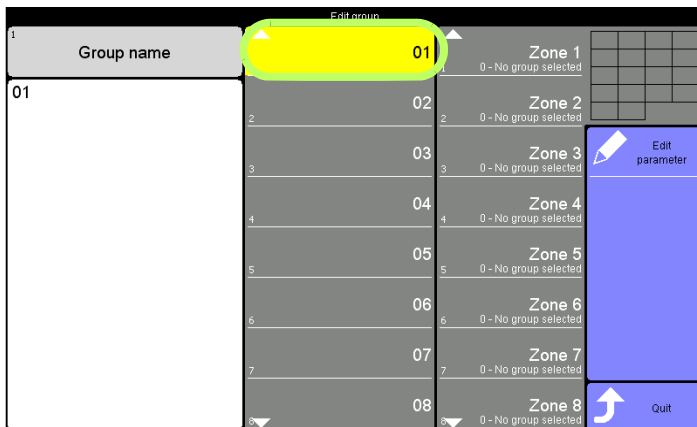
In the input field of ↗Numeric keypad [C] (page 49) the setting of the zone with the least number is displayed.


### 9.4.1 Edit group

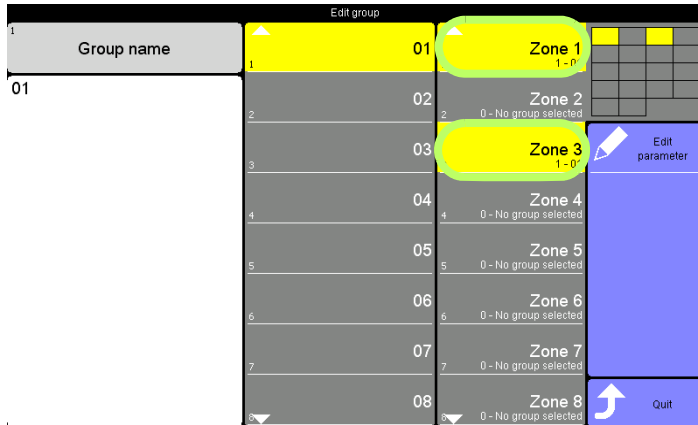
<b>Description</b>	 <p>For data entry on the hot runner controller, the defined zone groups (maximum 32) can be selected by the user for selection of zones.</p>
<b>How it works</b>	Associated zones (e.g. nozzles in a special tool area, manifold zones) can comfortably be combined in groups and saved with a freely specified name.
<b>What good is it</b>	The possibility of grouping of zones eases the operation and saves time. The groups are saved with a freely specified name and can easily be recognized by the user.
<b>Setting by</b>	↗Zone selection keys [D] (page 50) in ↗Input dialog zones (page 46)



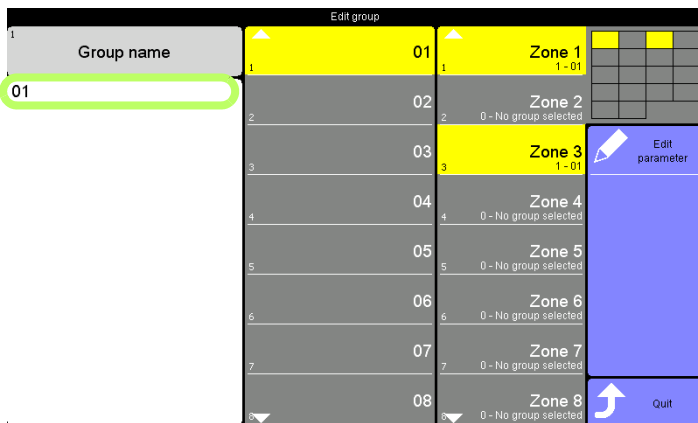
 There is no group (no group is assigned to any zone) defined.  
Press key



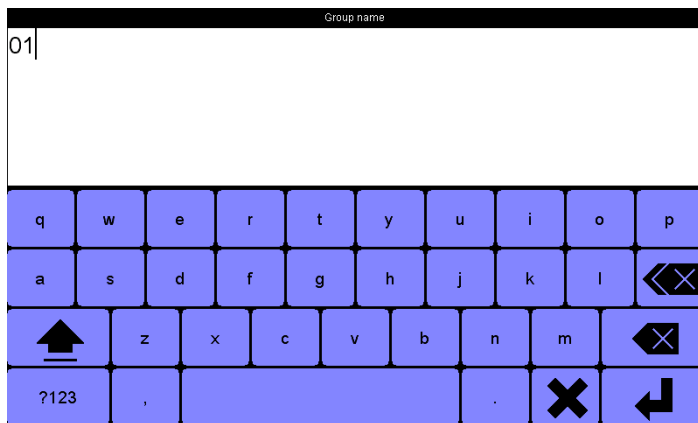
 Select group (here: 01)



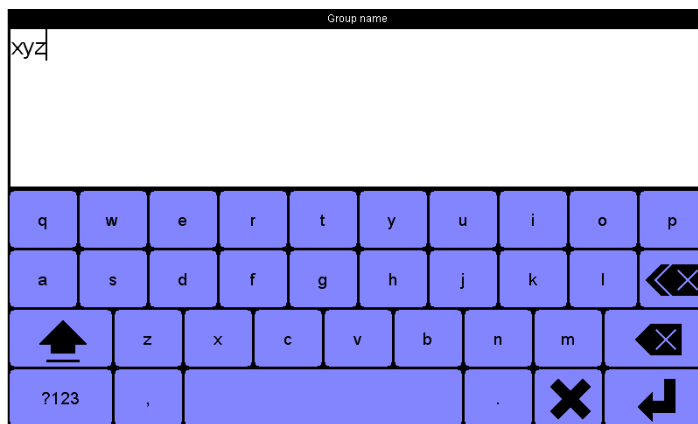
Select zones (here: Zone 1 & Zone 3)



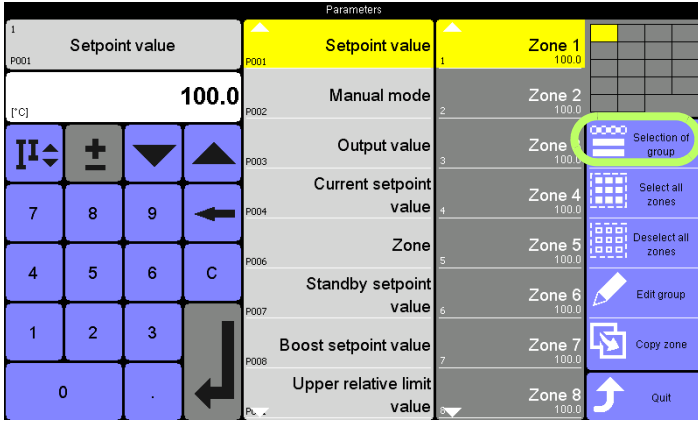
Select group name (here: 01)



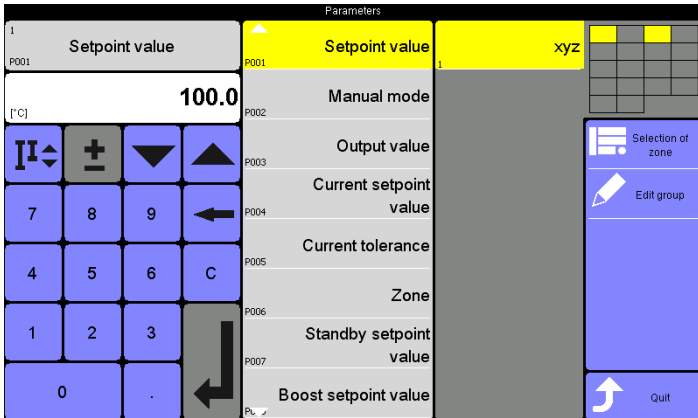
Change group name 01 by visual keyboard



Confirm xyz



Selection of group



**xyz** is now available for selection out of groups.

In this example is exactly 1 group defined, this is taken for selection.




Quit dialog

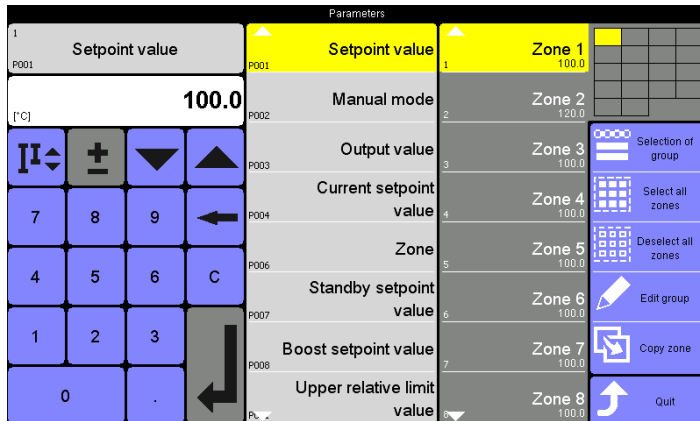
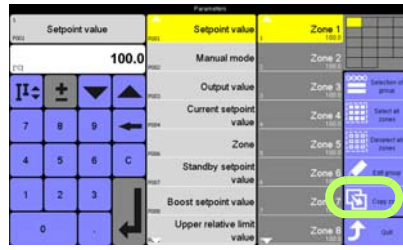


For each zone the assignment to a group can be changed by parameter ↗[P046]Group number (page 192).



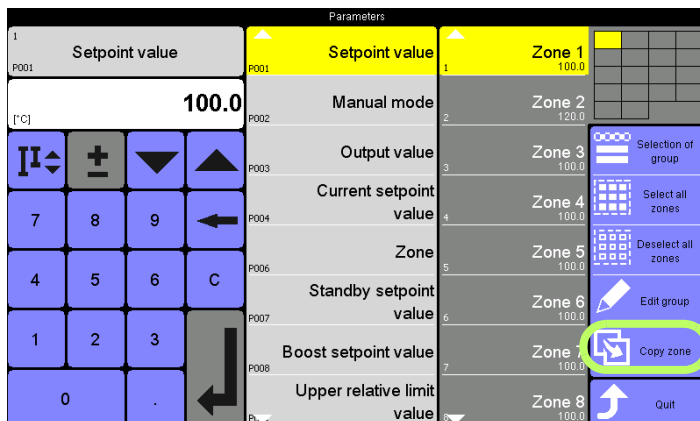
### 9.5 Copy parameters from one zone to another

<p><b>Description</b></p> 	<p>The parameters of a zone can be selected and transferred to one or more other zones by copying.</p> <p>When you copy the parameter ↗[P045]Zone name (page 192) the system adds characters to preserve the uniqueness of the name.</p>
<p><b>How it works</b></p>	<p>The user selects a zone and the corresponding parameters, which are then copied to at least one or more zones.</p>
<p><b>What good is it</b></p>	<p>The function eases the work of setting parameters for the customer.</p>
<p><b>Setting by</b></p>	<p>↗Zone selection keys [D] (page 50) in ↗Input dialog zones (page 46)</p>

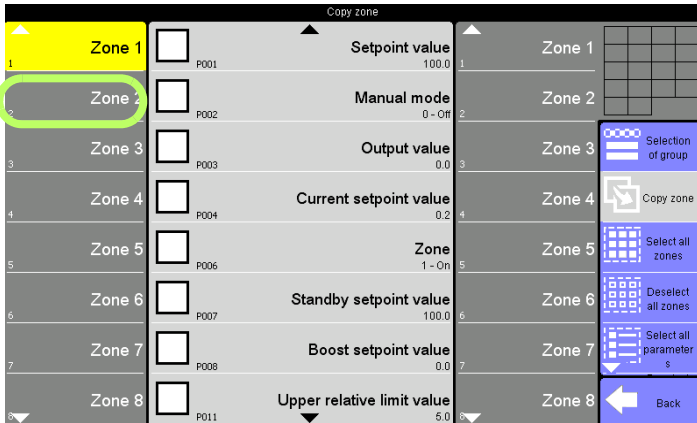


Setting example

Zone 2 setpoint value 120  
Zone 5 setpoint value 100



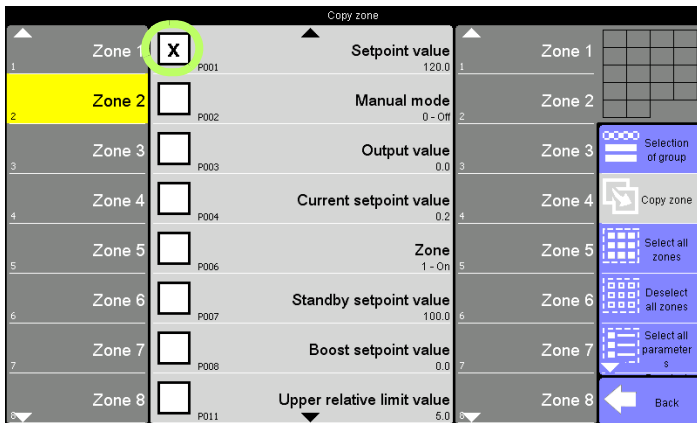
Press key



Select the zone you want to copy  
Example zone 2



In the dialog box that opens, the last selected zone for the function appears selected. Only one zone can be selected.



Select parameter of the zone you want to copy  
Example zone 2 setpoint value



For the selected zone, you can select any number of parameters for the copy.



Select all parameters



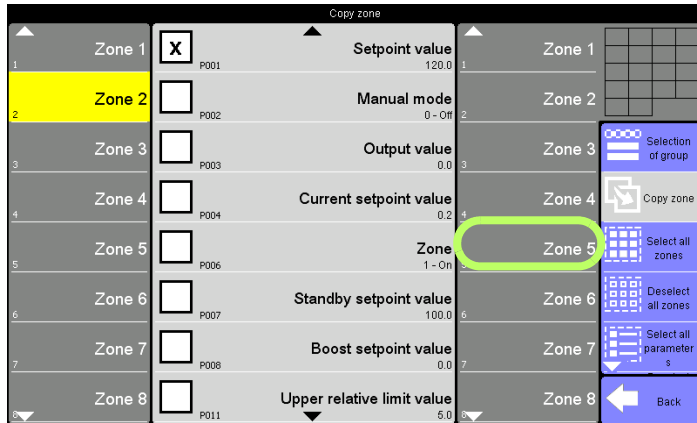
Deselect all parameters



Deactivate parameters: Select the cross, to delete it.

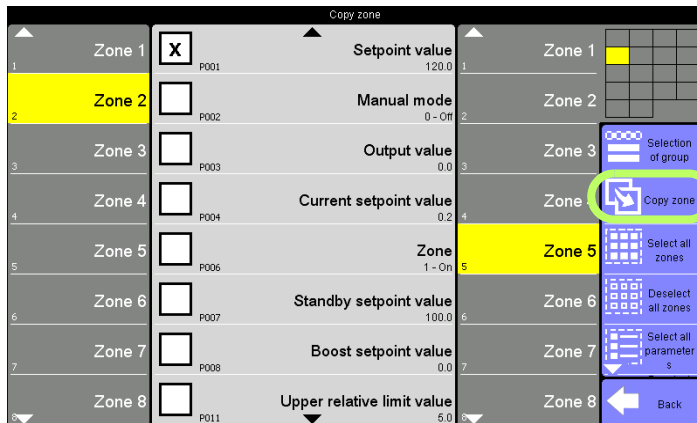


Activate parameters: Select the empty field, to set a cross.

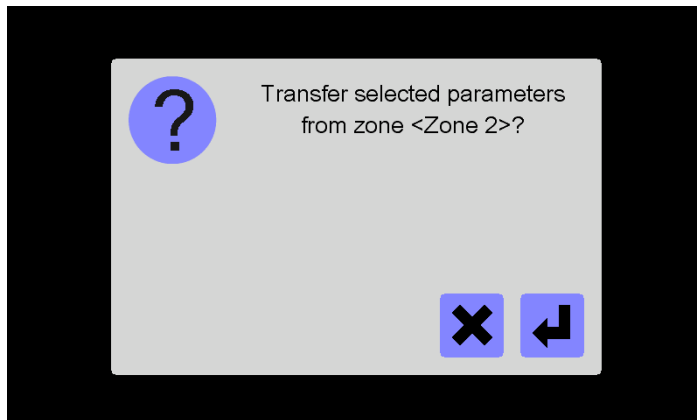


Select destination zone for copy

Example zone 5



Press key




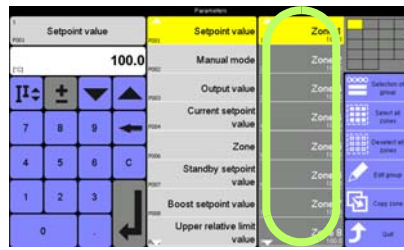
Confirm



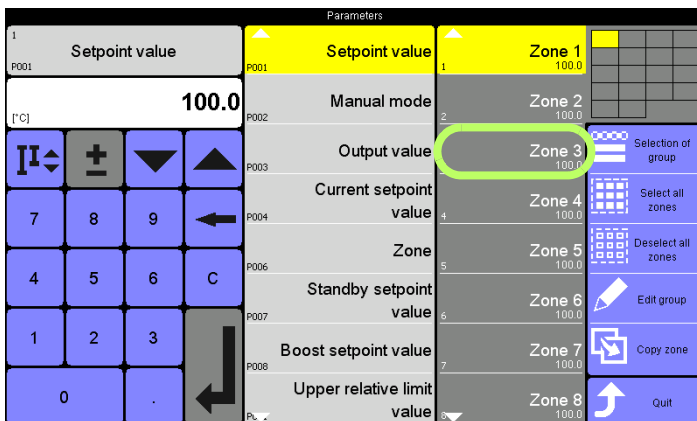
Quit dialog

## 9.6 DIRECT zone selection [E]

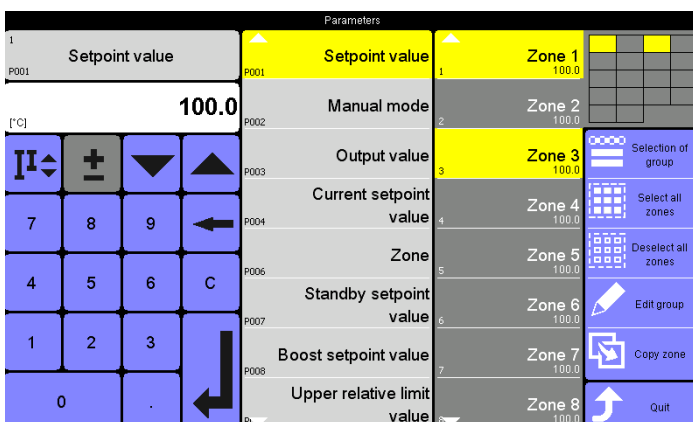
<p><b>Description</b></p> 	<p>In ↗DIRECT zone selection [E] (page 58) 8 zones are displayed one below the other. As soon as they are selected, they are colour coded. ↗DIRECT zone selection [E] (page 58) can be scrolled and is circulating. By ↗Zone Selection Overview [F] (page 60) can be identified, which zones are overall selected for the hot runner controller.</p>
<p><b>How it works</b></p>	<p>↗Select single zones by tap. (page 58)</p>
<p><b>How it works</b></p>	<p>↗Select zone area by double-clicking (page 59)</p>
<p><b>What good is it</b></p>	<p>Zone dependent input entered in uniform dialog.</p>
<p><b>Setting by</b></p>	<p>↗DIRECT zone selection [E] (page 58) in ↗Input dialog zones (page 46)</p>



### Select single zones by tap.



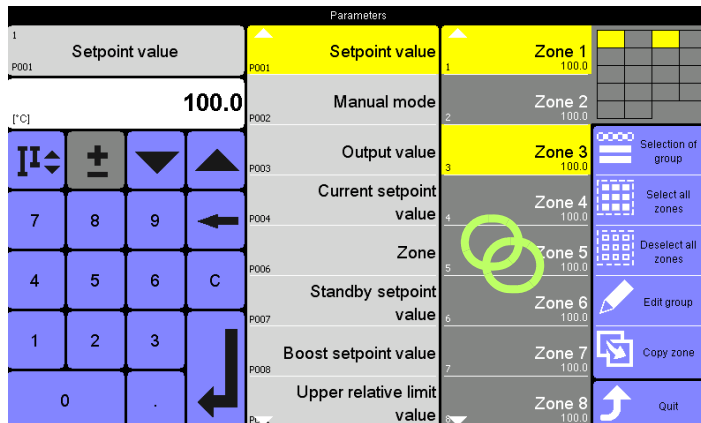
Select single zones (here: Zone 3)



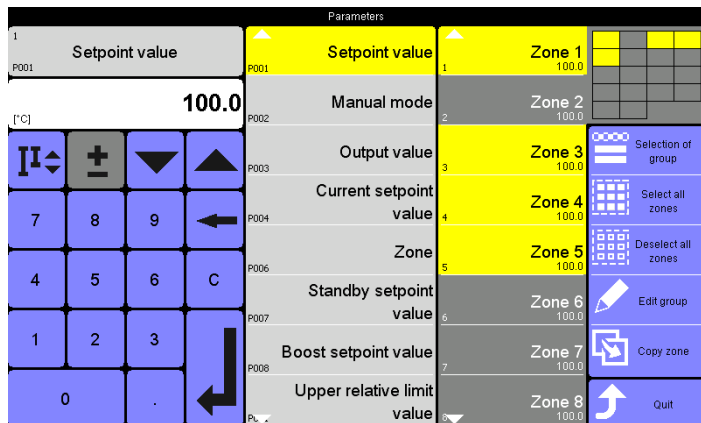
Zone 1 and zone 3 are selected.

Selection of further zones see also chapter ↗Scroll (page 20) or ...

## Select zone area by double-clicking



Select zone area (Zone 3-5)  
(here: quick double-clicking on zone 5)



Zone 1, zone 3 up to zone 5  
are selected.

Selection of further zones see  
also chapter ↗Scroll (page 20)  
or ...



The area between the firstly selected zone and the zones selected by double-clicking is displayed as selected and color-coded.




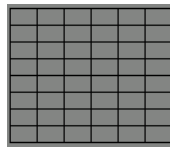
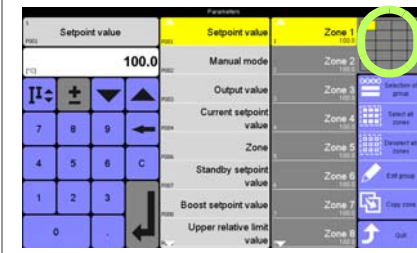
...Quit dialog



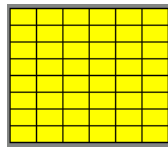
In the input field of ↗Numeric keypad [C] (page 49) the setting of the zone with the least number is displayed.

## 9.7 Zone Selection Overview [F]

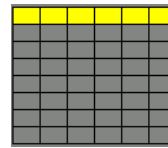
<p><b>Description</b></p> 	<p>In ↗Zone Selection Overview [F] (page 60) you get an overview over all zones, which are selected for parameter changes, due to the fact that this can not be identified in all circumstances in the scrolled ↗DIRECT zone selection [E] (page 58), ↗Zone Selection Overview [F] (page 60) is not selectable.</p>
<p><b>How it works</b></p>	<p>By tap on the zones they are added to ↗Zone Selection Overview [F] (page 60) (zone selected) and/or removed (zone deselected).</p>
<p><b>What good is it</b></p>	<p>Zone dependent input entered in uniform dialog.</p>
<p><b>Setting by</b></p>	<p>↗Zone Selection Overview [F] (page 60) in ↗Input dialog zones (page 46)</p>



None




All



Zone 1-6

## 10 Function keys

### 10.1 Program

<p><b>Description</b></p> 	<p>A program means a data set <u>with all parameters of all zones</u> of a <b>hotcontrol cDT+</b> hot runner controller.</p> <p>Programs can be stored (internal: 10; on USB stick dependent on storage capacity), activated, deleted, exported from internal storage and imported from USB stick.</p> <p>Is a tool coding available for the tool, a coding information is sent to <b>hotcontrol cDT+</b> by the maximal 8 digital inputs (only for Option tool coding in <b>hotcontrol cDT+</b>) on plug. The program allows allocation between tool coding and program.</p>
<p><b>How it works</b></p>	<p>For the <b>hotcontrol cDT+</b> hot runner controllers programs can be saved with freely selectable name internal or to the USB stick connected to the USB port. The freely naming of the programs, eases the recognition by the user.</p>
<p><b>What good is it</b></p>	<p>The programs support the user at adjustment caused by often tool replacement and reduce the start-up phase.</p>
<p><b>Setting by</b></p>	<p>↗Function keys (page 18) Program ↗Login/Logout (page 27)</p>



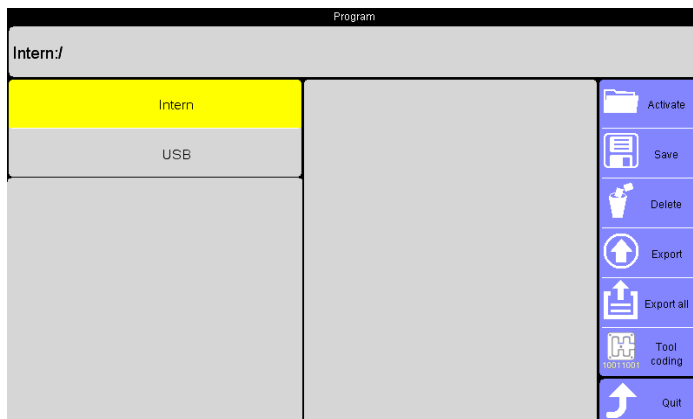
**i** Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Select function



Is no USB stick connected, only the internal storage is active.



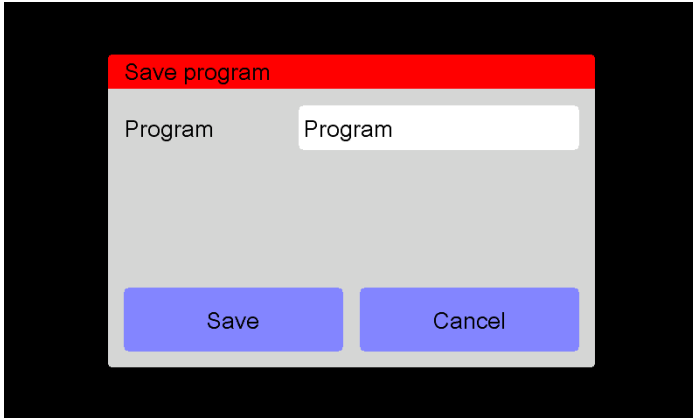
Create a new program (internal, as seen in the example here, or to USB).

Press key



The system assigns the name PROGRAM, as default, that can be changed by the user.

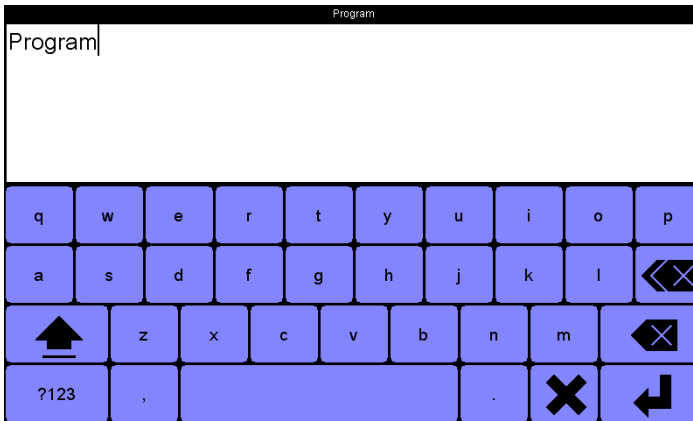
A program is stored internal in the system, when there is no USB stick connected.



Confirm on save (internal or on USB).

Cancel

By selection of the name, it can be changed by the visual keyboard.



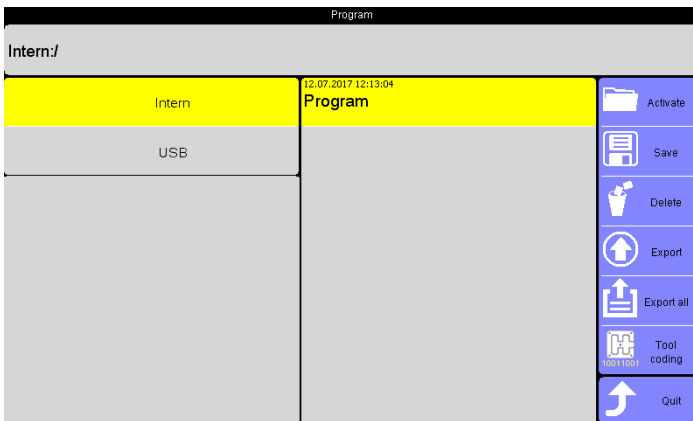
Reject



Confirm

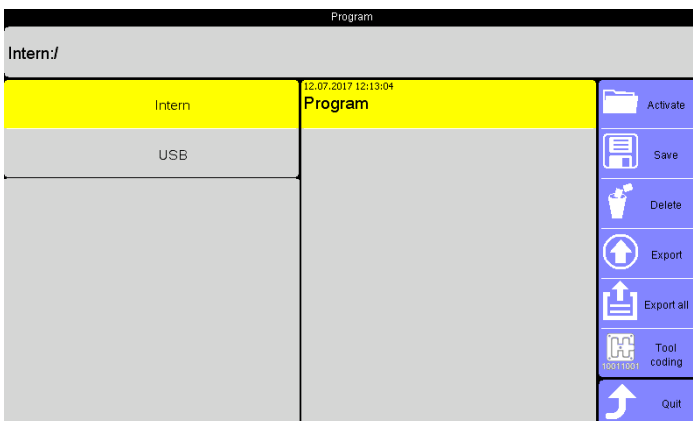


If a name is entered, which is already in use, the user can confirm overwriting the file.



The program is stored with the entered name (internal as seen in the example here, or to USB).

Above the file date/time of saving is shown in the display.



Stored program (internal as seen in the example here, or on USB) is activated in the hot runner controller, i.e. the hot runner controller takes the setting of the parameters out of the program.

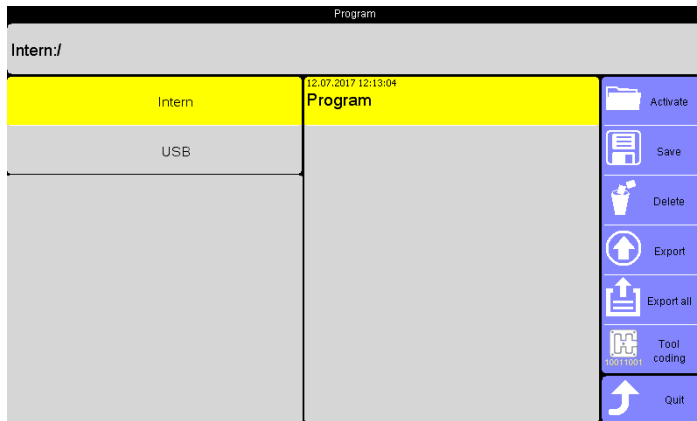



Select program  
Press key



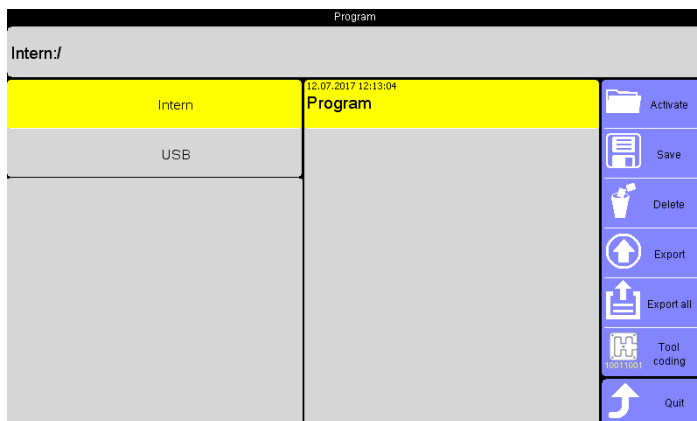
Is a program activated in the hot runner controller, the program name is displayed in the header.


As soon as one parameter in the hot runner controller is changed, the program name disappears from the header, because the current configuration is no longer conform with the activated program. Is option tool coding activated, display 00000000 alternates with the name of the activated program in the header.



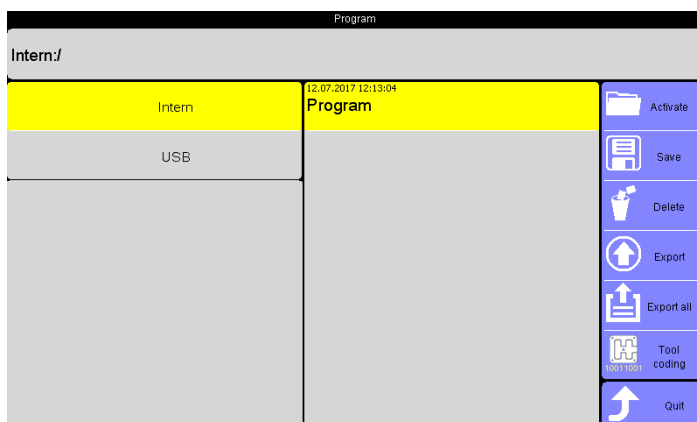
 Stored program (internal as seen in the example here, or to USB) is deleted.


Select program  
Press key



 Stored program (internal) can be exported on USB stick.

Select program  
Press key

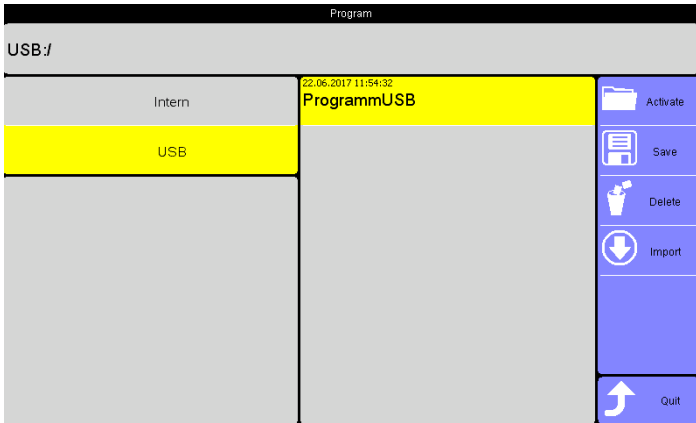


 All stored programs (internal) can be exported on USB stick.

Press key



Is no USB stick connected, a message is shown.



Import of



Program (on USB stick) in internal storage

Select program  
Press key

Select a directory on the USB stick



If available, directory selectable

Return to previous directory



The saved \*.ptp file on USB stick can only be read from **hotcontrol cDT+** hot runner controller.

Only with option Memory extension in **hotcontrol cDT+**..  
The key „Import all programs“ is only with activated option visible. All stored programs on the USB stick are then imported to the internal memory extension.



Quit dialog

## 10.2 Allocation of program and tool coding

After identification of the tool by means of the tool coding an assigned program is applied to the tool. Only internal stored programs can be allocated.

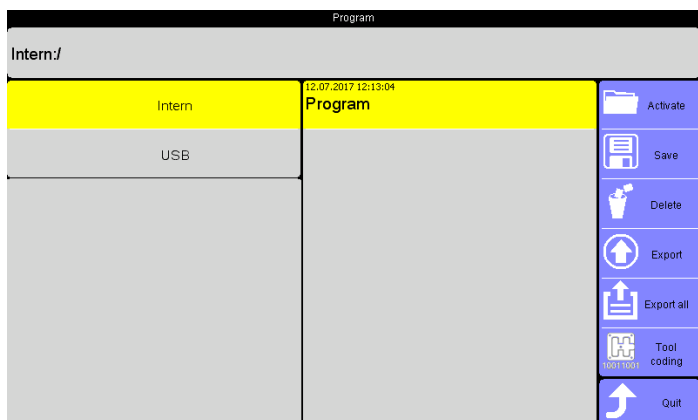
Only for option tool coding in **hotcontrol cDT+**.



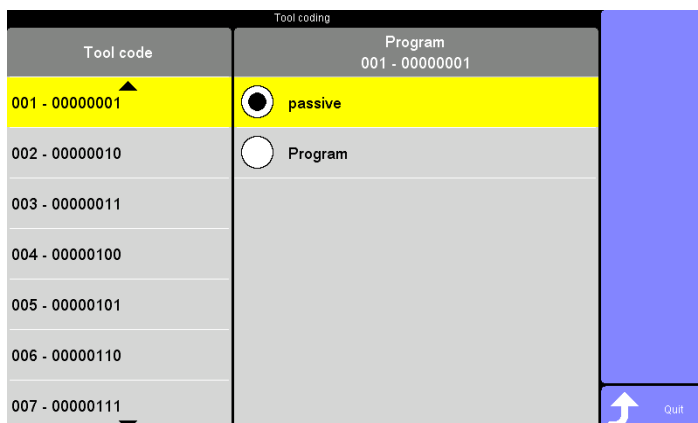
Is tool coding active in **hotcontrol cDT+**, transferred tool coding (e.g. 00000001) from the connected tool to **hotcontrol cDT+** is visible in the header.

Is a program activated for the hot runner controller, the program name alternates with the transferred tool coding in the header display.

Whether and which keys are enabled for the user, see chapter ↗User Administration (page 101)

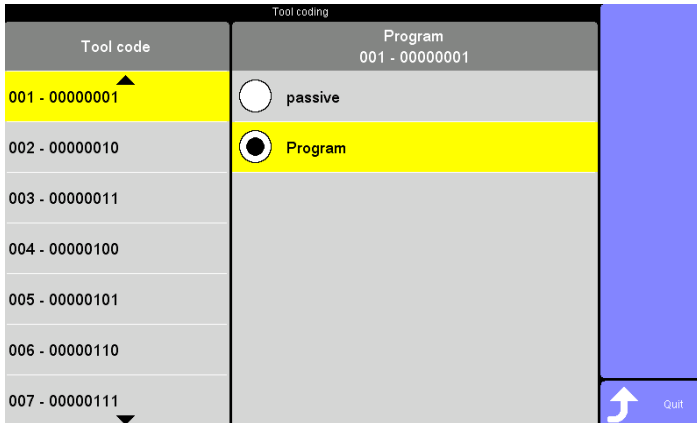


Allocate program and tool coding.  
 Press key

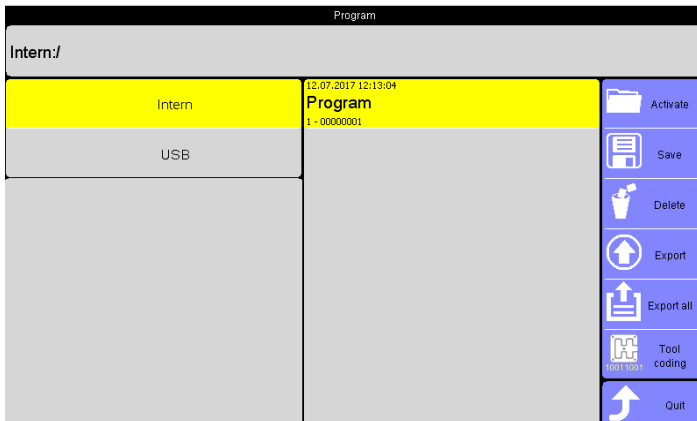


The tool coding is transferred by 8 digital inputs to **hotcontrol cDT+**. Here the allocation of tool code (001 - 255) and program is done.

	passive	No Allocation
	Program name	Allocated



 Quit dialog




The allocation of program and tool coding is displayed for the internal stored program.

 Quit dialog



Only internal stored programs can be allocated.  
One tool coding can be allocated to maximal 1 program.  
One program can be allocated several tool codings.

## 10.3 MoldSnapshot

<p><b>Description</b></p> 	<p>MoldSnapshot (review protocol) is important for users who need proof of the function and thus on the state of a hot runner.</p>
<p><b>How it works</b></p>	<p>MoldSnapshot takes a snapshot of the state of the hot runner. Here are the most important process data like e.g. setpoint values, actual values, output values, heating currents and control parameters saved.</p> <p>These data are like a fingerprint of the hot runner. These are parameters which mirror the state of the hot runner. For example, incorrect sizing of heaters are instantly recognizable, similar zones can be based on their characteristics compared directly.</p> <p>If all the parameters in a user-acceptable range, it can be saved as a reference for the MoldSnapshot the hot runner. A MoldSnapshot only makes sense when you can compare it with a reference snapshot.</p> <p>For <b>hotcontrol cDT+</b> hot runner controllers characteristics are exclusively saved on a USB stick connected to USB port.</p>
<p><b>What good is it</b></p>	<p>MoldSnapshot is a very easy to use and evaluate resource for quality and condition of a hot runner. MoldSnapshot provides the user a clear picture of the hot runner and provides the ability to detect errors early and rapid and correct it.</p>
<p><b>Setting by</b></p>	<p>↗Function keys (page 18) MoldSnapshot ↗Login/Logout (page 27)</p>



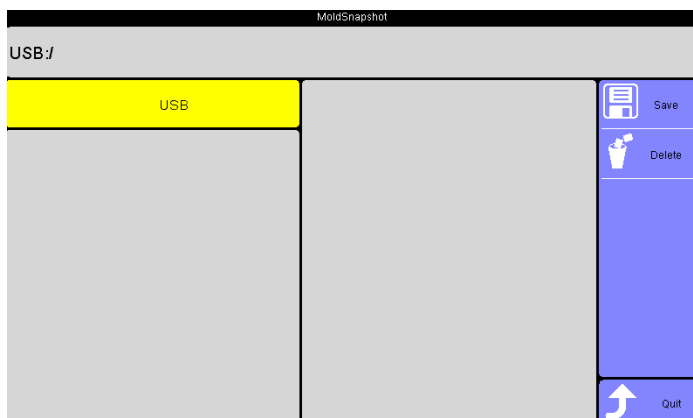
Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Select function



Is no USB stick connected, a message is shown.

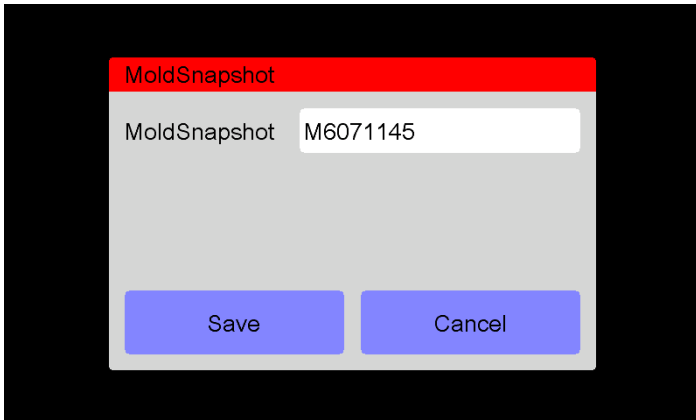


Create new MoldSnapshot.

Press key



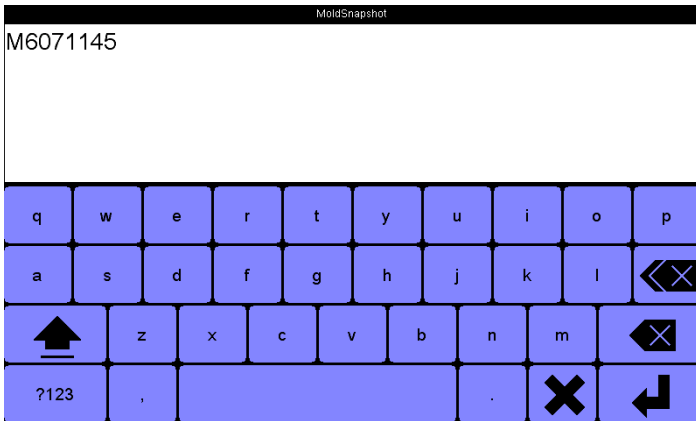
The system assigns a 7-digit name, that can be changed by the user.



Confirm on save

Cancel

By selection of the name, it can be changed by the visual keyboard.



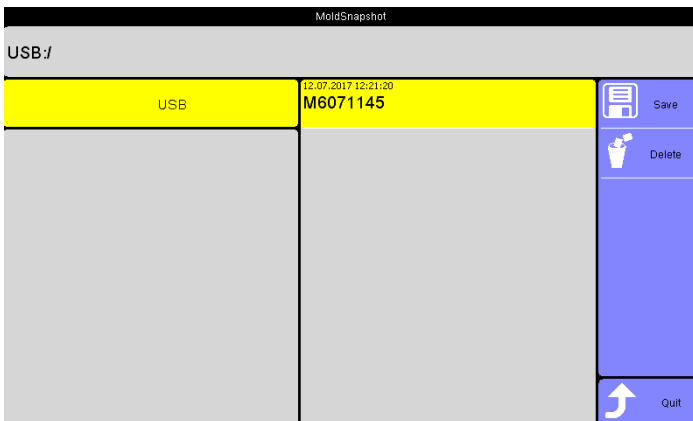
Reject



Confirm

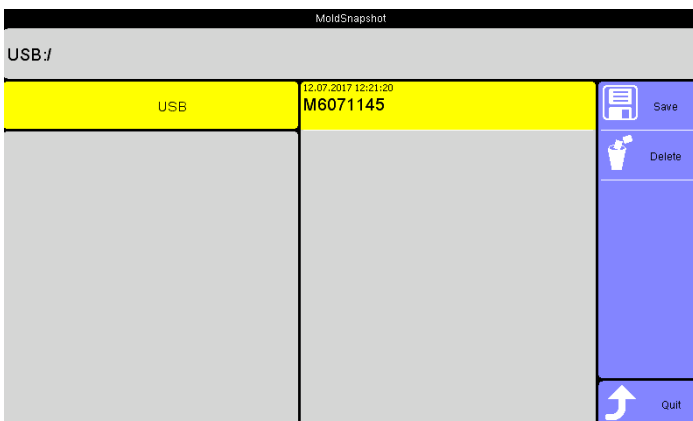


If a name is entered, which is already in use, the user can confirm overwriting the file.



MoldSnapshot is created and stored under the entered name on the USB stick.

Above the file date/time of saving is shown in the display.



The shown file in the view can be deleted from USB stick



Select MoldSnapshot  
Press key

Select a directory on the USB stick



If available, directory selectable

Return to previous directory




The saved CSV file on USB stick can e.g. imported with Microsoft EXCEL. The file is stored in Unicode (UTF-8) format.



Quit dialog

## 10.4 Activate current transfer

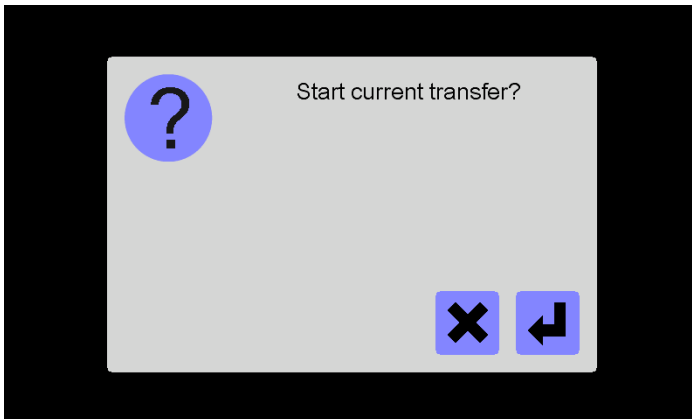
<b>Description</b> 	<p>The current setpoint values can be automatically set by a current transfer.</p>
<b>How it works</b>	<p>Call by key in Infocenter.</p>
<b>What good is it</b>	<p>Monitor the floating current in the heater by comparison with reference values. At current transfer only the active zones are taken into account.</p>
<b>Setting by</b>	<p>Key in Infocenter</p>



Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Select function



Confirm



Reject


<b>Message</b>	<p>Current transfer active</p>	<p>After confirm Appears briefly</p>
	<p>If current transfer is executed</p>	<p>Dialog quits by itself</p>




Any existing message is reset after a successful current transfer. See also chapter ↗Messages (page 132)




# 11 Alarms

<p><b>Description</b></p> 	<p>As soon, as an alarm is detected in the system, e.g. due to a sensor break, the color of the key changes. Are there no alarms, the key symbol is shown in normal color.</p>
<p><b>How it works</b></p>	<p>In the view Alarm all alarms for all zones are displayed.</p>
<p><b>What good is it</b></p>	<p>The user can get an overview quickly.</p>
<p><b>Setting by</b></p>	<p>View ↗Alarms (page 71)</p>




**i** Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

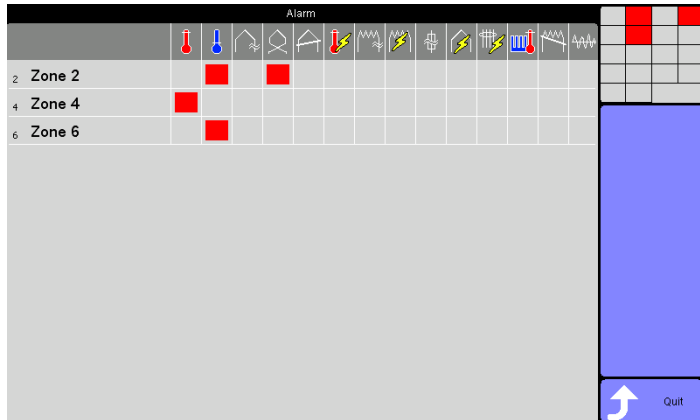
Press key



Alarm persistent




No alarms persistent



In the alarm list the following is shown:

- Zone 2 sensor incorrect polarity;
- Sensor zone 4 permuted with zone 6;
- Zone 7 up to max. not connected;
- User admin is logged in

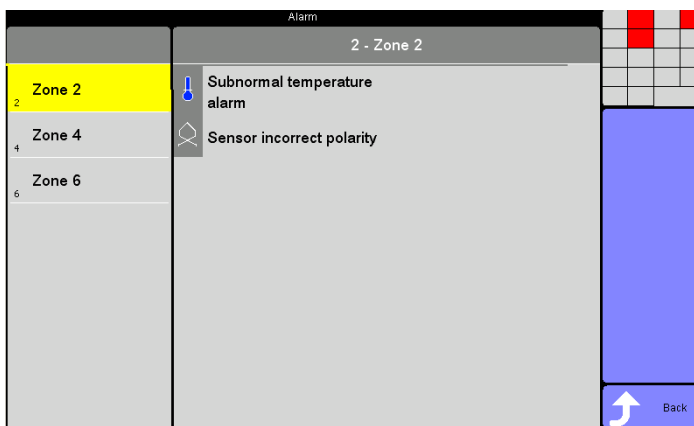
 Quit view



See Chapter ↗Messages - Alarms, Status, Functions (page 73)



Select detail information for alarm of zone ((here: zone 2))



Display of alarm of selected zone (here: zone 2) as symbol and in plain-text.

For detail information for further zones, select further zones.

Key is only displayed, when there are alarms to acknowledge.



If the reason for the alarm is no longer existing, e.g. a sensor break is repaired, the non storing alarms are automatically deleted from the alarm list. The storing alarms must be acknowledged.



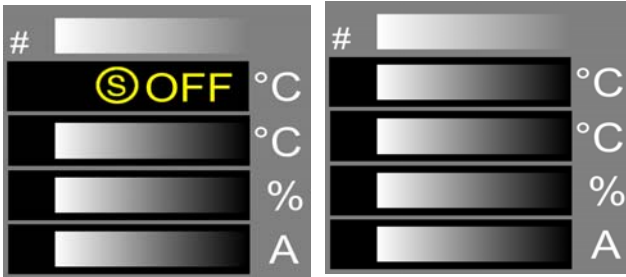
Which alarms are storing, because they are critical, is fixed in the system (see chapter Messages - Alarms, Status, Functions (page 73)).



Quit view

## 12 Messages - Alarms, Status, Functions

In case of certain operational states of the hot runner controller, a text is overlaid alternately with the actual value in the zone display. The messages are prioritized. There is only 1 text shown, the one with the highest priority (alarms in zones, see chapter ↗View Alarm (page 41)).



Text display (here: OFF) in the first line of the zone display alternates with current actual value.



Due to the fact, that some display texts differ between series **hotcontrol cDT** and series **hotcontrol cDT+** the texts of series **hotcontrol cDT** (= pT) are shown in column in **[pT de | en]** (de = german, en = English) additionally.



Alarm



Status



Function









Storing alarm, has to be acknowledged



Color change of zone on alarm

## 12.1 Alarms
















Zone Display	Alarm list	Description	[pT de   en]
 TCb		↗Sensor break TCb (page 78))	Fb   Sb
 TCp		↗Sensor incorrect polarity TCp (page 78))	FP   SP
 TCs		↗Sensor alarm TCs (page 79) (Short circuit in sensor circuit)	FAL   SSC
 Pot		↗Potential error Pot (page 79)	Pot
 CTA		↗Current tolerance error (page 80))	n.a.
 Thy		↗Thyristor alarm Thy (page 80)	tHY
 RC		↗Residual current RC (page 81)	FI   rSC
 Cur		↗Current alarm Cur (page 81) (Heater with too high power / short circuit in heating circuit)	IAL   IOL
n.a.	HBr	↗Total breakdown of heater HBr (page 82) / Heater not connected	Hb
n.a.	n.a.	↗Temperature outside limit value range (page 82)	n.a.
 Tmp		↗Temperature alarm Tmp (page 83) (Temperature above maximal value)	tAL   trG
 FUS		↗Fuse failure Fus (page 83) / ↗Phase missing FUS (page 83)	FUS
 Cha.		↗Channel data error Cha. (page 85)	ERR
 Cha		↗Channel data error card Cha (page 85)	ERR.
 SYS.		↗System data error SYS. (page 85)	SYS
 SYS		↗System data error card SYS (page 86)	SYS.
 HST		↗Heater alarm HST (page 84) (Heat sink temperature too high)	hAL   hSE
 CAN		↗Message CAN - Change in system configuration (page 86) ↗Message CAN - Failure of HTC-Card (page 86)	CAn
 CAN.		↗Message CAN. - No more actual values (page 87)	CAn
 CANID		↗Message CANID - Same NodeID (page 87)	CAn

Zone Display		Alarm list	Description	[pT de   en]
	IdD		Drift error at identification	Dri
	IdC		Error at identification	IdF   IdE
	Pm		Process alarm (see chapter ↗Process Monitoring (page 160))	PAL
	n.a.		Actual value lies above the tolerance range around the setpoint value (see chapter ↗Temperature outside limit value range (page 82))	n.a.
	n.a.		Actual value lies below the tolerance range around the setpoint value (see chapter ↗Temperature outside limit value range (page 82))	n.a.

## 12.2 Status

Zone Display		Alarm list	Description	[pT de   en]
	OFF		Zone is passive	OFF
	OUT		Actuator is deactivated	OFF

## 12.3 Functions

Status message		Description	[pT de   en]
	Man	Manual mode	Stb   Man
	Id	↗Auto Tuning (Identification) (page 142) running	Id
	SBy	Zone in Standby mode (see chapter ↗Standby (page 26))	SbY
	Bo	Zone in Boost mode (see chapter ↗Boost (page 24))	bST
	MCK	↗MoldCheck (page 150) (Diagnostics) active	dIA
	HnD	↗Heat'n'Dry (page 141)	HnD
	SUP	↗Start-up mode (page 143) active	AFb   StA
	SBo	Start-up mode Boost running	AFb   StA
	Trp	Manual temperature ramp active	rAP
	Arp.	↗Automatic ramp (page 139) active. Marking slowest zone.	Ar.
	Ar	Automatic ramp active (see chapter ↗Automatic ramp (page 139))	Ar
	RfZ	Leading zone manual mode	FSt   CoU
	PmL	↗ (page 159) Learning phase active	PLn
	PmO	↗ (page 159) not active yet	PrO
	RH	↗Relay heating (page 149)	n.a.

## 13 Trouble Shooting

Messages are shown to the user by

- CUI07 Control&User Interface 07

For a problem **Directly after Switch-on** see chapter ↗Immediately after Switch ON.

Hardware problem	Trouble Shooting
Touch remains dim	Check control fuse
LEDs on HTC-card do not flash	Check control fuse See Chapter ↗Status indication on HTC-Card See Chapter ↗Replacement of single components


In all other, here not explicitly described cases, send the Hot Runner Controller hotcontrol cDT+ in for repair.


Below you can see how to find and eliminate errors during operation and how the messages look like in the various displays.




For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.


### 13.1 Sensor break TCb

	<p>A sensor break is a disconnection in the sensor circuit where the sensor wire is squeezed somewhere in between sensor and controller.</p>
<p><b>How it works</b></p>	<p>After detection of an error, an error message is immediately output and the heating of the corresponding zone is switched off.</p>
<p><b>What good is it</b></p>	<p>The alarm sensor break provides the user with a specific indication of the error in the hot runner or the wiring, and provides the ability to pinpoint errors quickly and correct it.</p>

Remedy	Reason	Trouble Shooting
	<p>Sensor break</p>	<p>Check the connected sensors</p> <ul style="list-style-type: none"> <li>■ Check connecting cable of hot runner controller</li> <li>■ Check sensor input</li> </ul>



### 13.2 Sensor incorrect polarity TCp


	<p>Sensor incorrect polarity means, that the thermocouple is connected with the wrong polarity to the controller.</p>
<p><b>How it works</b></p>	<p>Due to the incorrect wiring, the controller measures a faulty actual value. For not yet heated tool, the fault is not visible. Only when the zone is heated up, the error is immediately detected and an error message displayed.</p>
<p><b>What good is it</b></p>	<p>The alarm sensor incorrect polarity provides the user with a specific indication of the error in the hot runner or the wiring, and provides the ability to pinpoint errors quickly and correct it.</p>

Remedy	Reason	Trouble Shooting
	<p>Sensor incorrect polarity</p>	<p>Check the connected sensors</p> <ul style="list-style-type: none"> <li>■ Check sensor connection +/-</li> </ul>






### 13.3 Sensor alarm TCs

		<p>Under a sensor alarm, we understand the case, where</p> <p>a) the sensor wire is squeezed somewhere in between sensor and controller and a short circuit exists</p> <p>b) the sensor is not in the intended position (removed or is swapped with another).</p>
<p><b>How it works</b></p>		<p>Through the defect in the cable to the controller a low temperature value is forecast. The actual temperature is much higher than the measured temperature.</p> <p>If there is no rise in temperature measured in a zone type (considered nozzles and manifold) in a dependent time, a sensor alarm is displayed to the user. To prevent damage to the appropriate zone, the heating is turned OFF.</p> <p>A sensor alarm can be faulty, and that is when the heat output of the zone is too small. It shows an identical error image.</p>
<p><b>What good is it</b></p>		<p>The sensor alarm provides the user with a specific indication of the error in the hot runner or the wiring, and provides the ability to pinpoint errors quickly and correct it.</p>

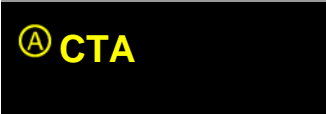

<p><b>Remedy</b></p> 	<p><b>Reason</b></p> <p>Short circuit in sensor circuit</p> <p>Sensor position</p>	<p><b>Trouble Shooting</b></p> <p>Check the connected sensors</p> <ul style="list-style-type: none"> <li>■ Check connecting cable of hot runner controller</li> </ul> <p>Check position</p>
---	--	---


### 13.4 Potential error Pot

		<p>On the sensor input a too high voltage is detected.</p>
<p><b>How it works</b></p>		<p>Error is detected by the hardware on the HTC 06/15 Heating Thermocouple Card.</p>
<p><b>What good is it</b></p>		<p>For protection all zones get de-energized (relay on HTC-Card OFF), also the zones on the other HTC-Cards, due to the voltage may come from any zone.</p>



<p><b>Remedy</b></p> 	<p><b>Reason</b></p> <p>Error on tool</p>	<p><b>Trouble Shooting</b></p> <ul style="list-style-type: none"> <li>■ Check sensor input</li> <li>■ Check grounding/sensor</li> </ul>
--	---	---


### 13.5 Current tolerance error

		<p>A current tolerance error, indicates, that the measured heating current is outside the tolerance band for the zone compared to the reference value (current setpoint value) set.</p>
<p><b>How it works</b></p>		<p>The hot runner controller measures the currents through the heaters continuously and compares these to the reference values, the current setpoint values. This can be specified manually or automatically by call of the function current transfer.</p> <p>A current tolerance error indicates either a partly breakdown of the heater or that the current setpoint values were not yet set after a change of the connection controller and hot runner.</p>
<p><b>What good is it</b></p>		<p>The current tolerance error provides the user with a specific indication of the error in the hot runner or of a wrong setting, and provides the ability to pinpoint errors quickly and correct it.</p>



Remedy	Reason	Trouble Shooting
	Ground	Check Heating
	Sensor at heating output	Check wiring system
	Tool changing without current transfer	Execute current transfer


### 13.6 Thyristor alarm Thy

		<p>A thyristor alarm indicates a defective component in the hot runner controller.</p>
<p><b>How it works</b></p>		<p>The hot runner controller checks the measurement of the heating currents, whether a power controller (thyristor) is uncontrolled heated in the hot runner controller due to a defect.</p> <p>Since this is a critical error case which can damage the heating circuit due to overheating, the heating circuit is immediately switched off (relay on HTC-Card OFF).</p>
<p><b>What good is it</b></p>		<p>The thyristor alarm primarily protects the heater against temperature excess, which causes an electric damage in the heater and replacement of the heater.</p> <p>It provides the user with a specific indication of the error in the hot runner and provides the ability to correct it quickly.</p>



Remedy	Reason	Trouble Shooting
	Defective component	Replacement defective component (see chapter 7 HTC 06/15 Replace Heating Thermocouple Card)


## 13.7 Residual current RC

		<p>The residual current (see parameter <math>\nearrow</math>[SP05]Maximum residual current) set was exceeded for <b>hotcontrol cDT+</b> and the Heatings were de-energized (relay on HTC-Card OFF).</p>
<p><b>How it works</b></p>		<p>The residual current for the hot runner controller is measured by the current transformer in the feed line of <b>hotcontrol cDT+</b> and registered in the CUI07.</p>
<p><b>What good is it</b></p>		<p>The residual current provides the user with a specific indication of the error in the hot runner or of a wrong setting, and provides the ability to pinpoint errors quickly and correct it.</p>


Remedy	Reason	Trouble Shooting
	<p>Tool humid</p>	<p>Check tool on humidity</p> <ul style="list-style-type: none"> <li>▪ Due to poor / wet insulation, a part of the current flows e.g. via the protective conductor or directly in the ground.</li> </ul>
	<p>Limit value wrong</p>	<p>Check settings for limit value and adjust it, if necessary</p>


## 13.8 Current alarm Cur

		<p>On the Heating output a short circuit was detected.</p>
<p><b>How it works</b></p>		<p>At switch-on of the zone the heating current is controlled. Is a defined limit exceeded, there may be a short-circuit. The Heating circuit is de-energized (relay on HTC-Card OFF).</p>
<p><b>What good is it</b></p>		<p>A current alarm with subsequent disconnection avoids damage on the device and provides the user with a specific indication of the error in the hot runner.</p>

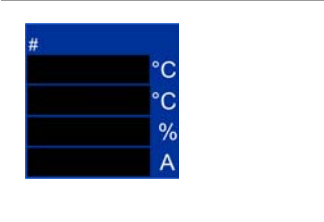
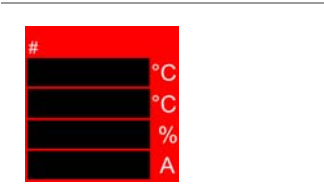
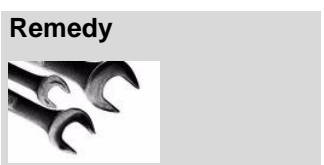
Remedy	Reason	Trouble Shooting
	<p>Short circuit in heating circuit</p>	<ul style="list-style-type: none"> <li>▪ Check Heating</li> <li>▪ Check wiring system</li> </ul>

### 13.9 Total breakdown of heater HBr



	n.a.	Total breakdown of heater is an alarm message in hot runner controllers. It is output additional with the current alarm, when a break is detected in the heating circuit, i.e. no heating current is measured.
<b>How it works</b>		Indicates the user a disconnection in the heating circuit. The heating current measurement determines a heating current of 0.0 A.
<b>What good is it</b>		The alarm total breakdown of heater provides the user additionally with a specific indication of the error in the hot runner or the wiring, and provides the ability to pinpoint errors quickly and correct it.


Remedy	Reason	Trouble Shooting
	Wiring	Check wiring system
	Heating	Check heating, measure electrical resistance

### 13.10 Temperature outside limit value range



	Subnormal temperature	The actual temperature value is monitored in the hot runner controller on limits. An actual temperature value outside the set limits, generates this alarm by changing the color of the frame of the affected zones.
	Excess temperature	
<b>How it works</b>		The parameters $\nearrow$ [P013]Upper absolute limit value, $\nearrow$ [P014]Lower absolute limit value and the parameters $\nearrow$ [P011]Upper relative limit value, $\nearrow$ [P012]Lower relative limit value define the range of the actual temperature value.
<b>What good is it</b>		Exceeds the actual temperature value the limits, the user gets a specific indication of the error. He can remove this without deviation and delay.
	<b>Reason</b>	<b>Trouble Shooting</b>
	Limit value too low	Check settings for limit value and adjust it, if necessary


### 13.11 Temperature alarm Tmp

		<p>A temperature alarm is generated, when the actual temperature value exceeds the parameter ↗[P010]Upper setpoint value limit +5K for more than 5 seconds. The Heating of the concerned zones is switched-off (↗[P003]Output value=0).</p>
<p><b>How it works</b></p>		<p>The parameter should be adjusted dependent on the measurement range of the used thermocouple.</p>
<p><b>What good is it</b></p>		<p>A temperature alarm with subsequent disconnection avoids damage on the device and provides the user with a specific indication of the error in the hot runner.</p>

Remedy	Reason	Trouble Shooting
	<p>Partial failure of sensor</p>	<p>Incorrect actual value display, but no sensor short-circuit</p> <ul style="list-style-type: none"> <li>■ Check sensor, exchange if necessary</li> </ul>

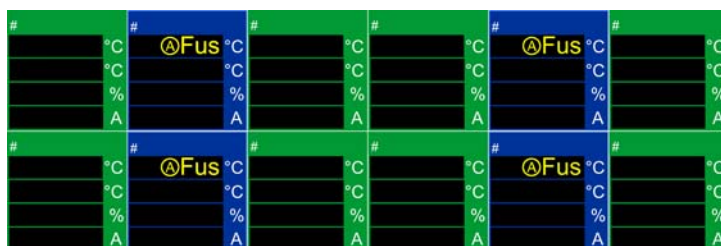
### 13.12 Fuse failure Fus

		<p>The hot runner controller controls the status of fuses in the heating circuit and output an error message in case of a defective fuse.</p>
<p><b>How it works</b></p>		<p>The error message is displayed in the zone.</p>
<p><b>What good is it</b></p>		<p>The alarm fuse failure provides the user with a specific indication of the error. He can remove this without deviation and delay.</p>

Remedy	Reason	Trouble Shooting
	<p>Fuse defective</p>	<p>Check fuse on HTC-Card, replace if necessary (see chapter ↗HTC 06/15 Heating Thermocouple Card - Replace fuses)</p>
	<p>Phase missing (see chapter ↗Phase missing FUS)</p>	<ul style="list-style-type: none"> <li>■ Check mains voltage before fuse</li> <li>■ Check circuit breaker</li> <li>■ Check control fuse</li> </ul>

#### 13.12.1 Phase missing FUS



Is one phase missing, the display in the view Standard shows a certain systematic. In the existing example for 12 zones phase L2 is missing. It is recommended to display 6 zones in parallel.




In the first line of the zone display, the display of the text alternates with the display of the current value (see chapter ↗Alarms), when the hot runner controller is set into operation and the heatings are ON.

Phase L1 supplies Zone 1/4; Phase L2 supplies Zone 2/5; Phase L3 supplies Zone 3/6 on a HTC-Card.


## 13.13 Heater alarm HST

		<p>The temperature of the heat sink of the HTC card has exceeded the allowed limit value <math>\nearrow</math>[SP10]Heat sink limit value. All outputs on the concerned HTC-Card are switched off (<math>\nearrow</math>[P003]Output value = 0)</p>
<b>How it works</b>		<p>The HTC-Cards measure the heat sink temperature and switch off the heating outputs, when the limit value <math>\nearrow</math>[SP10]Heat sink limit value is exceeded.</p>
<b>What good is it</b>		<p>Protection of hot runner controller of damages due to overheating.</p>

Remedy	Reason	Trouble Shooting
	High temperature at installation location	Check environmental conditions at installation location
	Overload	Check: Coincidence factor = 100% duty ratio permanently at ambient temperature $\leq 25^{\circ}\text{C}$ ; At ambient temperatures from $25^{\circ}\text{C}$ to $45^{\circ}\text{C}$ , the coincidence factor can reduce up to 70% depending on the average output values and their duration.
	Connector to fan defective	<ul style="list-style-type: none"> <li>■ Check connector/ connecting cable</li> <li>■ Replace if necessary</li> </ul>
	Mechanical defect of fan	Check fan and clean if necessary


## 13.14 Channel data error Cha.

<b>A</b> Cha.	n.a.	A check sum is determined for the channel parameters of the CUI-Card. Is for some reason for one of these parameters an error detected that can not be corrected, the CUI-Card generates a channel data error.
---------------	------	--

Remedy	Reason	Trouble Shooting
	Check sum error in EEPROM; EEPROM OK	Edit any channel parameter [P***]. Errors will be corrected after a short time by calculating the checksum.
	Check sum error in EEPROM; EEPROM defective	Replace CUI-Card (see chapter ↗Replace Control&User Interface CUI07) or send Hot Runner Controller in for repair


## 13.15 Channel data error card Cha

<b>A</b> Cha	n.a.	A check sum is determined for the channel parameters of the HTC-Card. Is for some reason for one of these parameters an error detected that can not be corrected, the CUI-Card generates a channel data error.
--------------	------	--

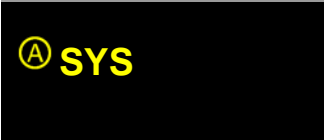

Remedy	Reason	Trouble Shooting
	Check sum error in EEPROM; EEPROM OK	Edit any channel parameter [P***]. Errors will be corrected after a short time by calculating the checksum.
	Check sum error in EEPROM; EEPROM defective	Replace HTC-Card (see chapter ↗HTC 06/15 Replace Heating Thermocouple Card) or send Hot Runner Controller in for repair

## 13.16 System data error SYS.

<b>A</b> SYS.	n.a.	A check sum is determined for the system parameters of the CUI-Card. Is for some reason for one of these parameters an error detected that can not be corrected, the CUI-Card generates a system data error.
---------------	------	--




Remedy	Reason	Trouble Shooting
	Check sum error in EEPROM; EEPROM OK	Edit system parameter [SP03]. Errors will be corrected after a short time by calculating the checksum.
	Check sum error in EEPROM; EEPROM defective	Replace CUI-Card (see chapter ↗Replace Control&User Interface CUI07) or send Hot Runner Controller in for repair

### 13.17 System data error card SYS




	n.a.	A check sum is determined for the system parameters of the HTC-Card. Is for some reason for one of these parameters an error detected that can not be corrected, the CUI-Card generates a system data error.
<b>Remedy</b> 	<b>Reason</b> Check sum error in EEPROM; EEPROM OK Check sum error in EEPROM; EEPROM defective	<b>Trouble Shooting</b> Edit system parameter [SP03]. Errors will be corrected after a short time by calculating the checksum. Replace HTC-Card (see chapter ↗HTC 06/15 Replace Heating Thermocouple Card) or send Hot Runner Controller in for repair

### 13.18 Message CAN

#### 13.18.1 Message CAN - Change in system configuration




		After switch-on of the hot runner controller a "Hardware check" is executed. This checks, whether all components in the project setup configured, are existing on the CAN-Bus. The project setup is always checked (cyclical version control of single components).
<b>Remedy</b>  No or wrong component responds on CAN address	<b>Reason</b> Incorrect plug connection CAN Incorrect plug connection Power controller card electrical defect	<b>Trouble Shooting</b> <ul style="list-style-type: none"> <li>■ Check connection to ribbon cable</li> <li>■ Replace ribbon cable if necessary</li> </ul> Check hardware in all slots (available?, good contacting?) Execute see chapter ↗Hardware Setup. <ul style="list-style-type: none"> <li>■ Check LEDs on HTC-Card (see chapter ↗Status indication on HTC-Card)</li> <li>■ Replace HTC-Card (see chapter ↗HTC 06/15 Replace Heating Thermocouple Card) or send Hot Runner Controller in for repair</li> </ul>

#### 13.18.2 Message CAN - Failure of HTC-Card




		The HTC-Cards in the Hot Runner Controller fail due to a hardware problem.
<b>Remedy</b> 	<b>Reason</b> Power controller card electrical defect	<b>Trouble Shooting</b> <ul style="list-style-type: none"> <li>■ Check LEDs on HTC-Card (see chapter ↗Status indication on HTC-Card)</li> <li>■ Replace HTC-Card (see chapter ↗HTC 06/15 Replace Heating Thermocouple Card) or send Hot Runner Controller in for repair</li> </ul>



### 13.18.3 Message CAN. - No more actual values

 <b>CAN.</b>		<p>The message appears during operation, when the CAN-Bus does no longer transfer actual values to the zone. The connection controller to external sensor is interrupted / disturbed.</p>
<p><b>Remedy</b></p>  <p>The component, that registers the temperature for this zone, does not work any longer; Problem with CAN-Bus</p>	<p><b>Reason</b></p> <p>Incorrect plug connection CAN</p> <p>Power controller card electrical defect</p>	<p><b>Trouble Shooting</b></p> <ul style="list-style-type: none"> <li>▪ Check connection to ribbon cable</li> <li>▪ Replace ribbon cable if necessary</li> <li>▪ Check LEDs on HTC-Card (see chapter ↗Status indication on HTC-Card)</li> <li>▪ Replace HTC-Card (see chapter ↗HTC 06/15 Replace Heating Thermocouple Card) or send Hot Runner Controller in for repair</li> </ul>

### 13.18.4 Message CANID - Same NodeID

 <b>CANID</b>		<p>The message appears when one and the same NodeID is detected several times on the CAN bus.</p>
<p><b>Remedy</b></p> 	<p><b>Reason</b></p> <p>DIP switch setting</p>	<p><b>Trouble Shooting</b></p> <ul style="list-style-type: none"> <li>▪ Check DIP switch setting</li> </ul>

### 13.19 Status indication on HTC-Card

On the HTC-Card are 3 LED's available.

The status of the HTC-Card can be identified by the displayed LED signals.


LED	Monitor mode	Pre operational mode	Operational mode	Error see displayed text of zone display
OK	Faster flashing	Slower flashing	Continuous light	Continuous light
ERR	OFF	OFF	OFF	Continuous light


During fan test, the OK-LED and the ERR-LED per HTC-Card flash alternately, card by card.

Remedies in case of errors see displayed text in zone display see chapter ↗ Trouble Shooting.

LED	Mode
SIO	Communication (CAN/SIO)

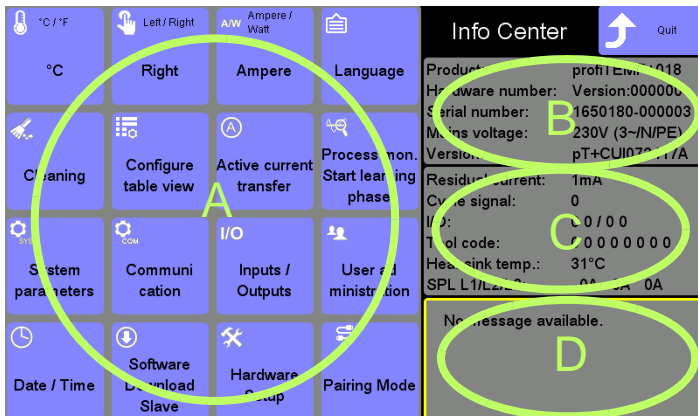
# 14 Infocenter

<p><b>Description</b></p> 	<p>The Infocenter allows changes for ↗System settings (page 90), triggering of selected functions and gives the user information in compressed form.</p> <ul style="list-style-type: none"> <li>■ ↗Product information / Status Info Process &amp; Hot runner controller (page 131)</li> <li>■ ↗Messages (page 132)</li> </ul>
<p><b>How it works</b></p>	<p>Call of function in Infocenter</p>
<p><b>What good is it</b></p>	<p>System setting centrally changed in one place.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>



**i** Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

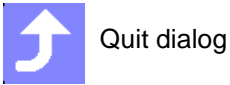


[A] ↗System settings (page 90)

[B] ↗Product information / Status Info Process & Hot runner controller (page 131)



[C] ↗Product information / Status Info Process & Hot runner controller (page 131)

[D] ↗Messages (page 132)



## 14.1 System settings

### 14.1.1 Change temperature unit

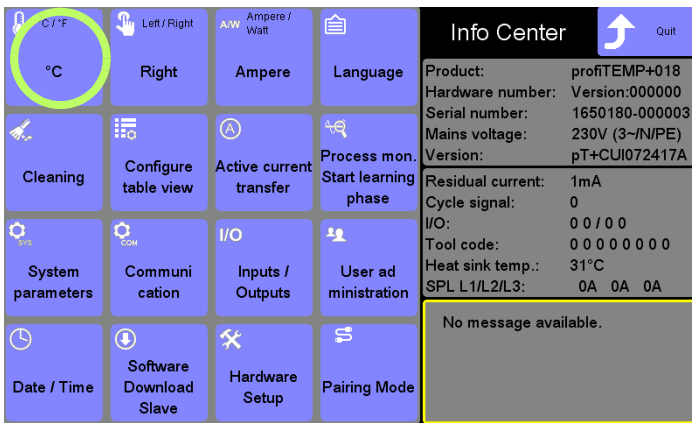
<p><b>Description</b></p> 	<p>All in the system implemented temperature values are changed from °C to °F and reverse due to the setting of temperature unit.</p>
<p><b>How it works</b></p>	<p>Call by key in Infocenter.</p>
<p><b>What good is it</b></p>	<p>Easy change of temperature unit</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter ↗[SP01]Temperature Unit (page 193)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>. Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)</p>



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



Temperature unit in °F

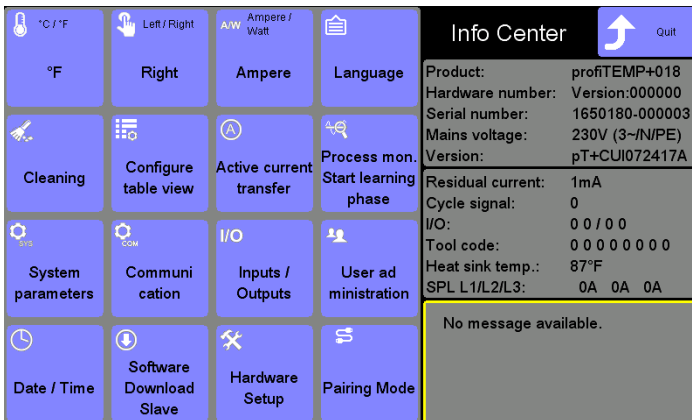


Press key



The temperature unit changes between °C and °F.

On touch the key appears selected.



Temperature unit in °F



Quit dialog


12.07.17 12:57:37		1/2 - Standard		00000000			
1	Zone 1	2	Zone 2	3	Zone 3	4	Zone 4
	211.7 °F		212.0 °F		211.9 °F		210.1 °F
	212.0 °F		212.0 °F		212.0 °F		212.0 °F
	25.1 %		17.4 %		26.1 %		32.7 %
	0.2 A		0.2 A		0.2 A		0.2 A
5	Zone 5	6	Zone 6	7	Zone 7	8	Zone 8
	212.0 °F		211.9 °F		211.3 °F		211.5 °F
	212.0 °F		212.0 °F		212.0 °F		212.0 °F
	19.9 %		17.8 %		10.9 %		10.9 %
	0.2 A		0.2 A		1.0 A		1.0 A
9	Zone 9	10	Zone 10	11	Zone 11	12	Zone 12
	211.5 °F		211.5 °F		211.5 °F		211.3 °F
	212.0 °F		212.0 °F		212.0 °F		212.0 °F
	10.9 %		10.7 %		10.7 %		10.9 %
	1.0 A		1.0 A		1.0 A		1.0 A


Temperature unit °F in standard view



Press key again to reset temperature unit

### 14.1.2 Key arrangement

<b>Description</b>	The arrangement of the keys on the basic display can be shifted between right and left.
	
<b>How it works</b>	Call by key in Infocenter.
<b>What good is it</b>	Adjustment for right or left handers
<b>Setting by</b>	Key in Infocenter

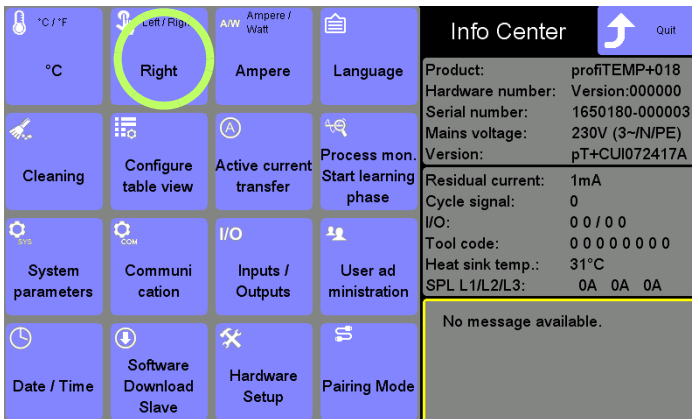
 Whether and which keys are activated for the user, see chapter 7 User Administration (page 101)



Display Infocenter by 7 Wipe down (page 15) in the header over screen edge



Key arrangement left

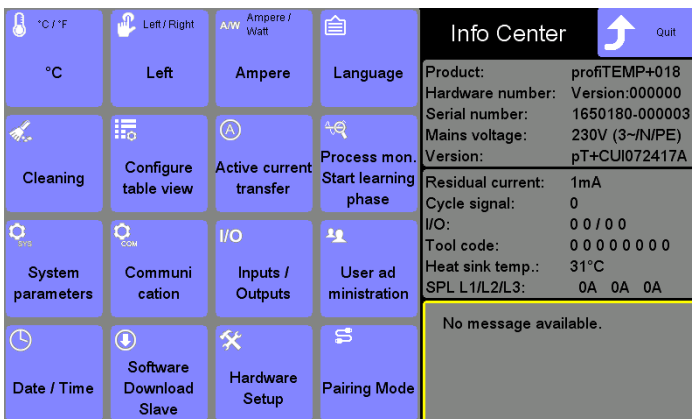


Press key



The key arrangement changes between right and left.

On touch the key appears selected.



Key arrangement left



Quit dialog


20.06.2016/13:26:33   Standard					
1	Zone 1	2	Zone 2	3	Zone 3
	100.1 °C		100.1 °C		100.0 °C
	100.0 °C		100.0 °C		100.0 °C
	21.4 %		14.2 %		22.5 %
	0.2 A		0.2 A		0.2 A
4	Zone 4	5	Zone 5	6	Zone 6
	99.3 °C		99.5 °C		99.9 °C
	100.0 °C		100.0 °C		100.0 °C
	13.1 %		15.7 %		3.6 %
	0.2 A		0.2 A		0.2 A


Key arrangement left in standard view



Press key again to reset key arrangement

### 14.1.3 Ampere / Watt

<b>Description</b>	 <p>Instead of the heating current, the heating power can be displayed in standard view.</p>
<b>How it works</b>	<p>Call by key in Infocenter. Reference value is the mains voltage.</p>
<b>What good is it</b>	<p>Change of the physical unit for the connected heating.</p>
<b>Setting by</b>	<p>Key in Infocenter</p>

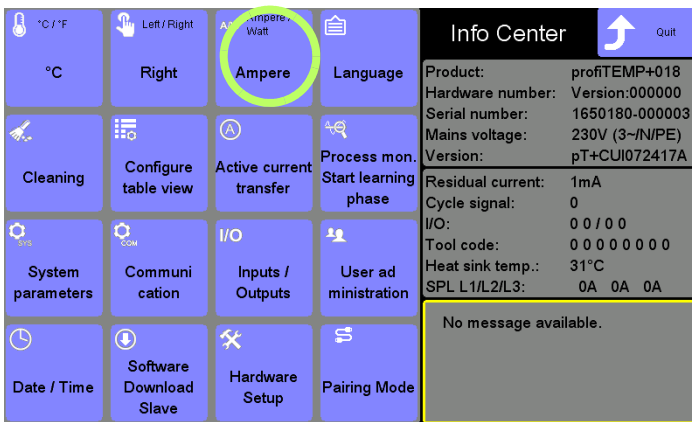
 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



Physical unit Watt

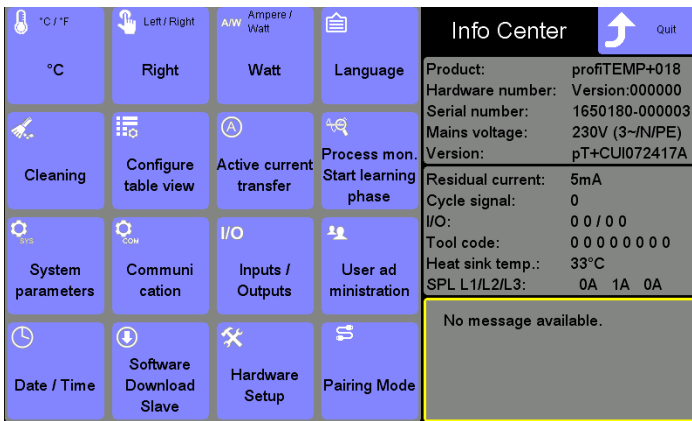


Press key

The displayed physical unit in the zone can be changed between heating current A and heating power W.



On touch the key appears selected.



Physical unit in W



Quit dialog



12.07.17 13:00:22		1/2 - Standard		00000000	
1	Zone 1	2	Zone 2	3	Zone 3
	100.1 °C		100.1 °C		100.1 °C
	100.0 °C		100.0 °C		100.0 °C
	23.3 %		15.9 %		24.1 %
	46 W		46 W		46 W
5	Zone 5	6	Zone 6	7	Zone 7
	100.1 °C		100.1 °C		100.0 °C
	100.0 °C		100.0 °C		100.0 °C
	18.6 %		16.2 %		10.7 %
	46 W		46 W		230 W
9	Zone 9	10	Zone 10	11	Zone 11
	100.0 °C		100.0 °C		100.0 °C
	100.0 °C		100.0 °C		100.0 °C
	10.7 %		10.7 %		10.7 %
	230 W		230 W		230 W


- Program
- Mold Snapshot
- Current transfer
- Views
- Off
- Boost
- Standby
- Logout admin
- Alarm


Physical unit heating power W in standard view



Press key again to reset physical unit

### 14.1.4 Activate current transfer

<b>Description</b>	The current setpoint values can be be automatically set by a current transfer.
	
<b>How it works</b>	Call by key in Infocenter.
<b>What good is it</b>	Monitor the floating current in the heater by comparison with reference values.
<b>Setting by</b>	Key in Infocenter




Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

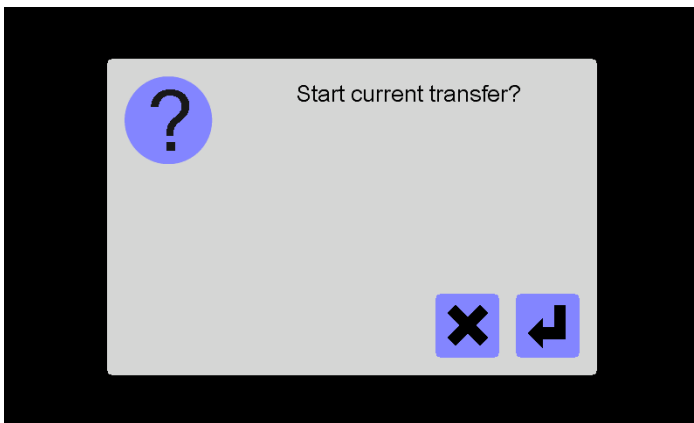



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge


Activate current transfer



Press key  On touch the key appears selected.



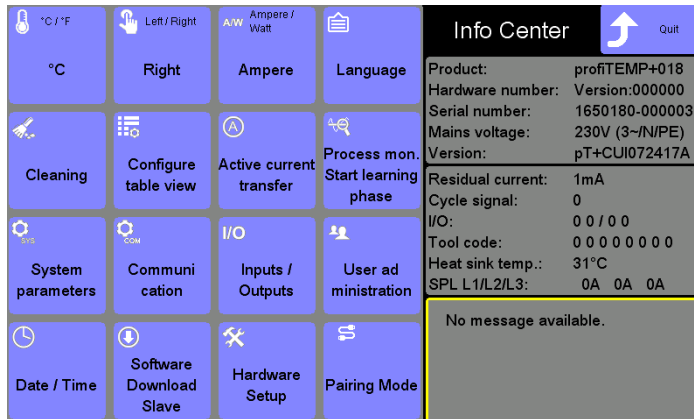
 Confirm

 Reject

Message

Current transfer active

After confirmation the adjoining message appears briefly



Current transfer executed.  
 (Any existing message „↗Current setpoint value is not set! (page 133)“ is reset after a successful current transfer, if the current transfer was executed for all zones)





Quit dialog




See also chapter ↗Messages (page 132)  
 See also chapter ↗Activate current transfer (page 70)

### 14.1.5 System parameters

<p><b>Description</b></p> 	<p>Each <b>hotcontrol cDT+</b> hot runner controller is delivered with a standard setting of parameters.</p> <p>Furthermore, the user can adapt the system to individual requirements by system parameters.</p>
<p><b>How it works</b></p>	<p>Call by key in Infocenter. Specify system parameters, which are unique and zone independent.</p>
<p><b>What good is it</b></p>	<p>Simple adaptation of <b>hotcontrol cDT+</b> hot runner controllers e.g. at integration in company networks.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>

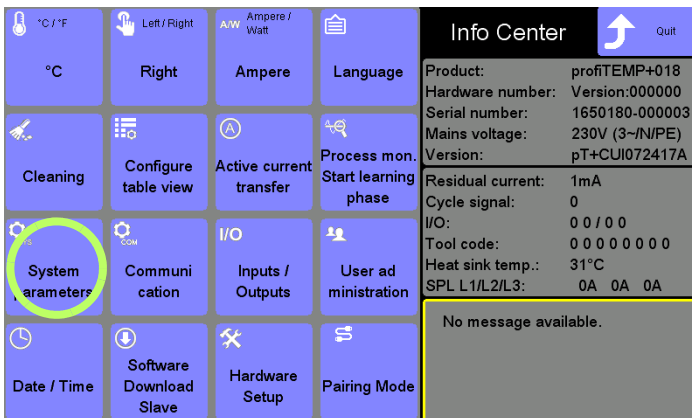
 For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

System parameters



The screenshot shows the Infocenter interface with a grid of menu items. The 'System parameters' item is circled in green. The 'Info Center' panel on the right displays the following data:

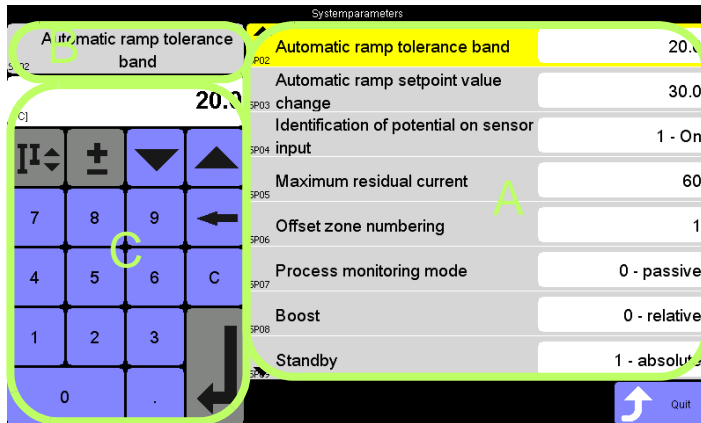
Product:	profTEMP+018
Hardware number:	Version:000000
Serial number:	1650180-000003
Mains voltage:	230V (3~/N/PE)
Version:	pT+CUJ072417A
Residual current:	1mA
Cycle signal:	0
I/O:	0 0 / 0 0
Tool code:	0 0 0 0 0 0 0
Heat sink temp.:	31°C
SPL L1/L2/L3:	0A 0A 0A

At the bottom of the Info Center panel, it states: "No message available."



Press key

On touch the key appears selected.



[A] System parameter list; the list is circulating.

[B] The selected system parameter out of the system parameter list is displayed in the parameter field upper left.

[C] By the displayed numeric keypad the specification of the new value for the selected parameter field can be done.




Further details on data entry see chapter ↗Numeric keypad [C] (page 49).  
For further details on system parameters see Manual Parameters **hotcontrol cDT+**.



Quit dialog

### 14.1.6 Communication

<p><b>Description</b></p> 	<p>Each <b>hotcontrol cDT+</b> hot runner controller is delivered with a standard setting of parameters.</p> <p>Furthermore, the user can adapt the system to individual requirements by communication parameters.</p>
<p><b>How it works</b></p>	<p>Call by key in Infocenter. Specify communication parameters, which are unique and zone independent.</p>
<p><b>What good is it</b></p>	<p>Simple adaptation of <b>hotcontrol cDT+</b> hot runner controllers e.g. at integration in company networks.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>



For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

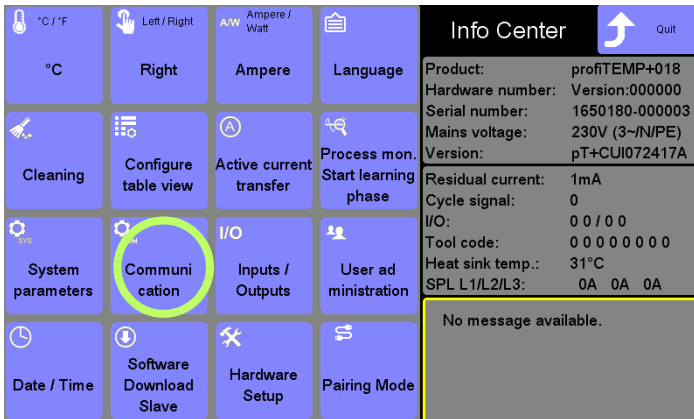



Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

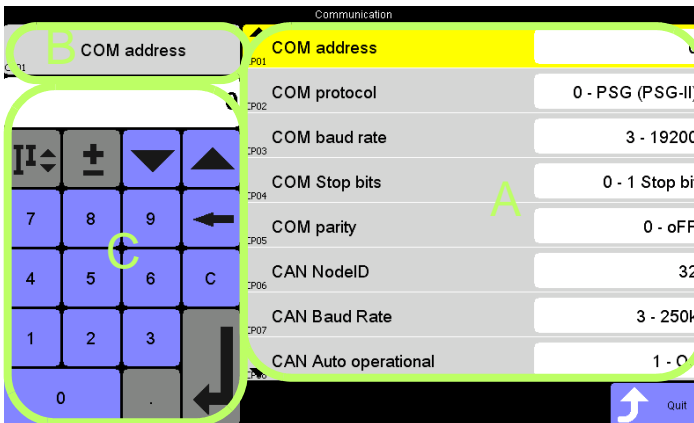


Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

Communication parameter



Press key  On touch the key appears selected.



[A] Communication parameter list; the list is circulating.

[B] The selected communication parameter out of the communication parameter list is displayed in the parameter field upper left.

[C] By the displayed numeric keypad the specification of the new value for the selected parameter field can be done.







Further details on data entry see chapter ↗Numeric keypad [C] (page 49).  
For further details on communication parameters see Manual Parameters **hotcontrol CDT+**.



Quit dialog

## 14.1.7 User Administration

<b>Description</b> 	<p>Absolute process security can be achieved by preventing unauthorized input on the device.</p>
<b>How it works</b>	<p>In <b>hotcontrol cDT+</b> are three user levels (standard user, without a password; user prof and system administrator (user admin) with free choice of password), in which individual functions and parameters can be enabled or disabled.</p> <p>The <b>hotcontrol cDT+</b> hot runner controllers have a user administration. The user administration allows the customization of the enabled functionality to the needs of each customer and can be made by himself.</p>
	<p>Standard operation; Standard user without password</p>
	<p>Professional operation; user prof with freely selectable password</p>
	<p>System administrator operation; user admin with freely selectable password</p>
<b>What good is it</b>	<p>In times in which 100% quality parts must be provided, faulty insertions must be prevented. With the user management, reliability in the production process is guaranteed.</p>
<b>Setting by</b>	<p>Key in Infocenter</p>




The function is **only** available for **user admin**, who has to be logged in (see chapter ↗Login/Logout (page 27)).



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

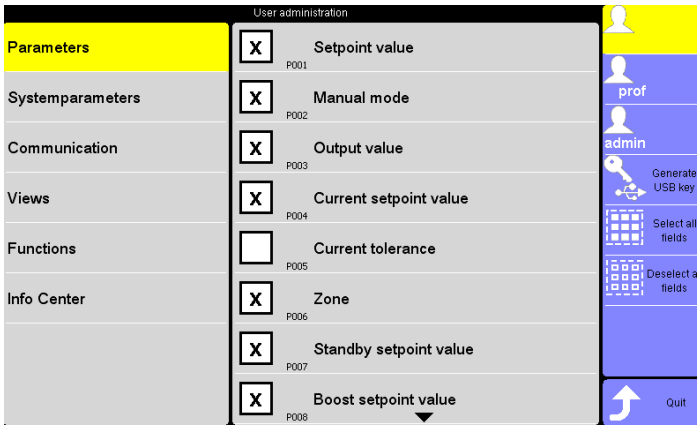
User Administration



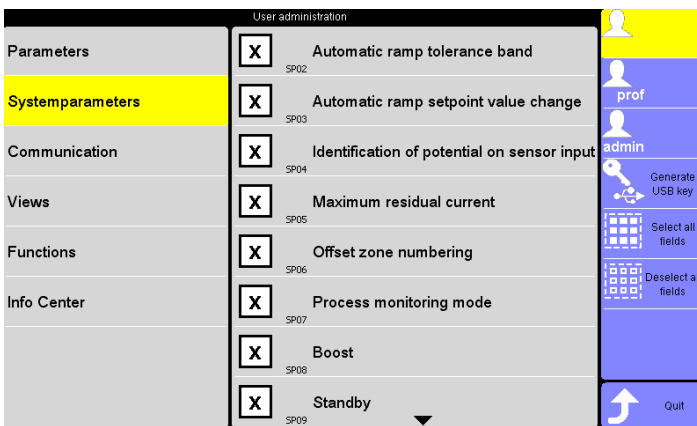
Press key  On touch the key appears selected.



The subsequent displayed settings are exemplary and dependent on the user and on chapter 7 Delivery Status Standard (page 191).

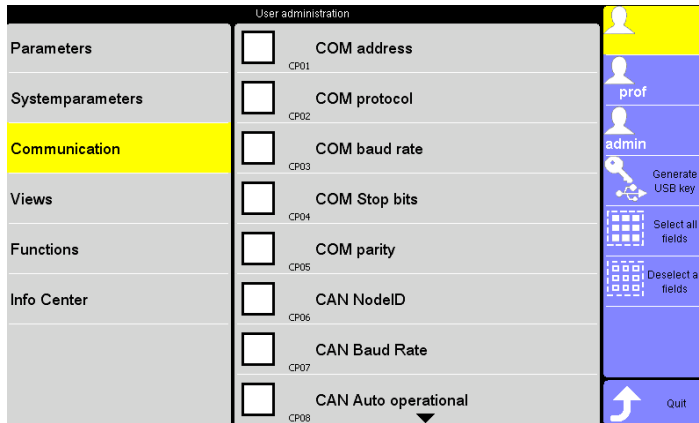


**Parameters for**  
Standard user  
(Exemplary display)  
adjustable

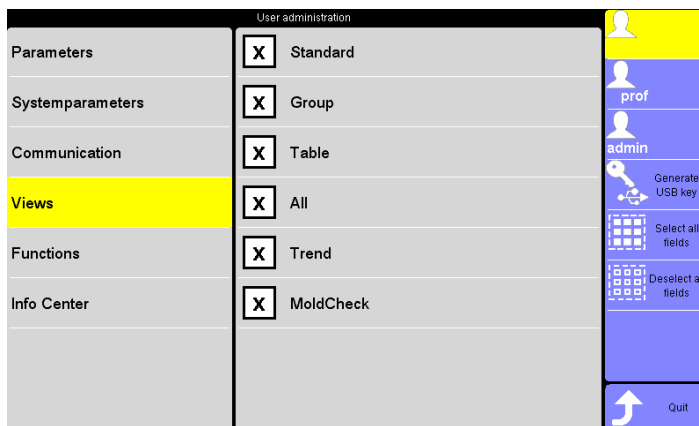


**System parameters for**  
Standard user  
(Exemplary display)  
adjustable

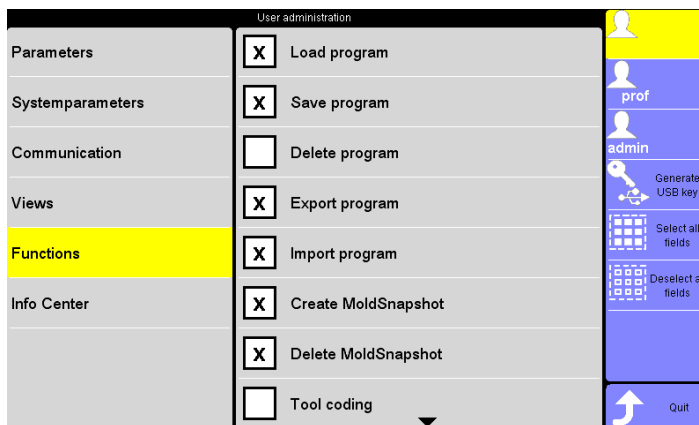




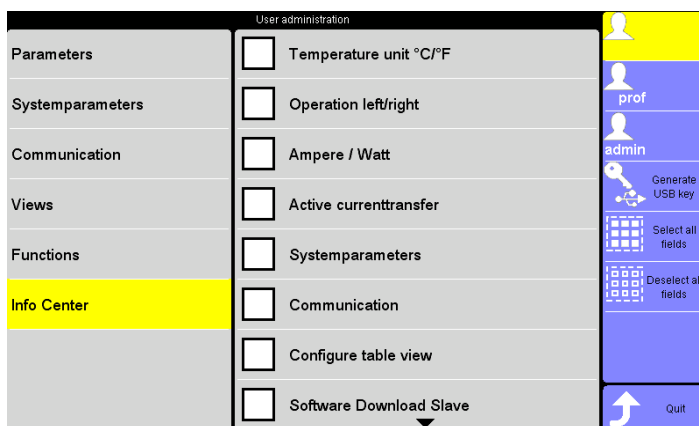
**Communication** for  
Standard user  
(Exemplary display)  
adjustable



↗Views (page 33) for  
Standard user  
(Exemplary display)  
adjustable



**Functions** for  
Standard user  
(Exemplary display)  
adjustable



↗Infocenter (page 89) for  
Standard user  
(Exemplary display)  
adjustable



For further details on single settings see various chapters in this Start-up-, Service- and Operation Manual.  
The procedure for settings for standard user and user prof is identical.



Deactivation: Select the cross, to delete it.



Activation: Select the empty field, to set a cross.



Select all fields

Instead of selection / Deselection of single settings




Deselect all fields




Quit dialog

### 14.1.7.1 Change password

In the user administration the default password for user prof and user admin can be changed.



Default setting  
 User prof - Standard password: prof  
 User admin - Standard password: admin

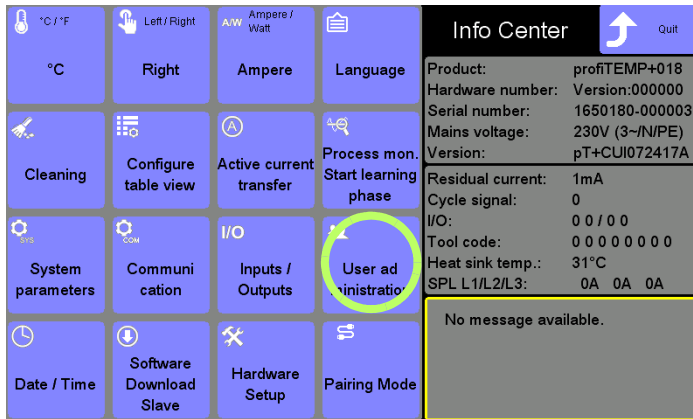


The function ↗Change password (page 105) is **only** available **for user admin**, who has to be logged in (see chapter ↗Login/Logout (page 27)).



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge


User Administration



Press key



On touch the key appears selected.



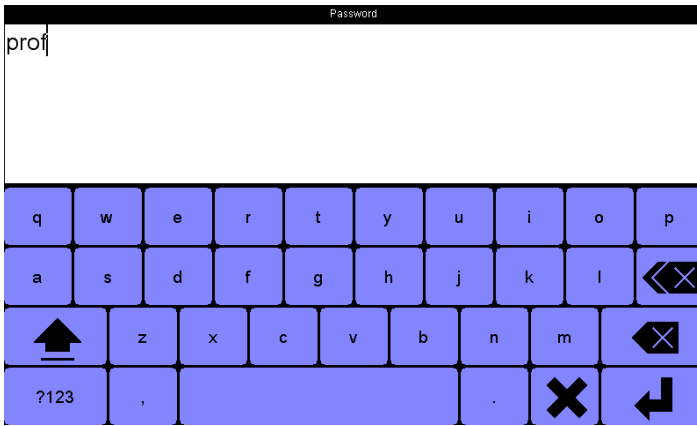
The subsequent displayed settings are exemplary and dependent on the user and on chapter ↗Delivery Status Standard (page 191).



Password for

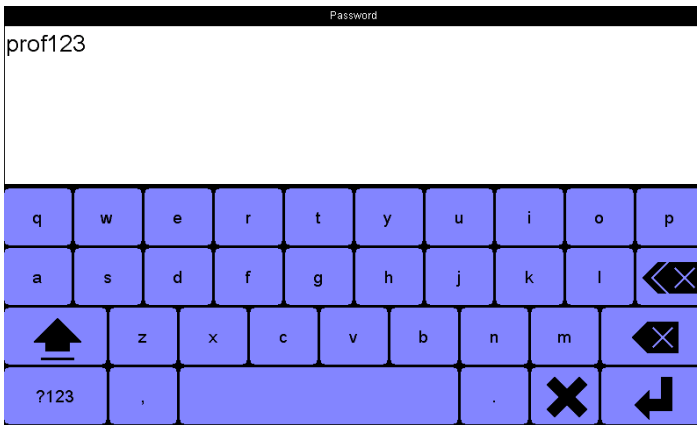
User prof  
(Exemplary display)

adjustable



Enter password using the visual keyboard. (Each entered character is prompted in plain-text)

Example enter prof123



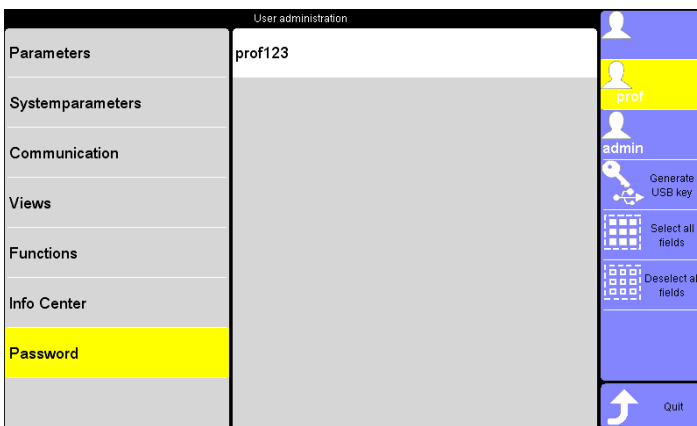
Reject



Confirm



If an already used password is entered, an error message is displayed.



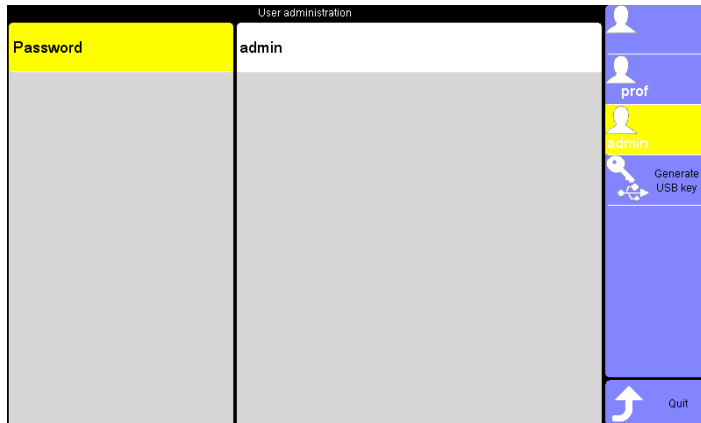
The entered password is accepted and prompted in plain-text.



Quit dialog



The procedure for settings for user prof and user admin is identical.



Dialog to change password for user admin.  
 Procedure see ↗Change password (page 105) for user prof.

### 14.1.7.2 Generate USB key

For each user (except standard user) a password is existing. The password can be exported in a file, as a so called USB key, on a connected USB stick.

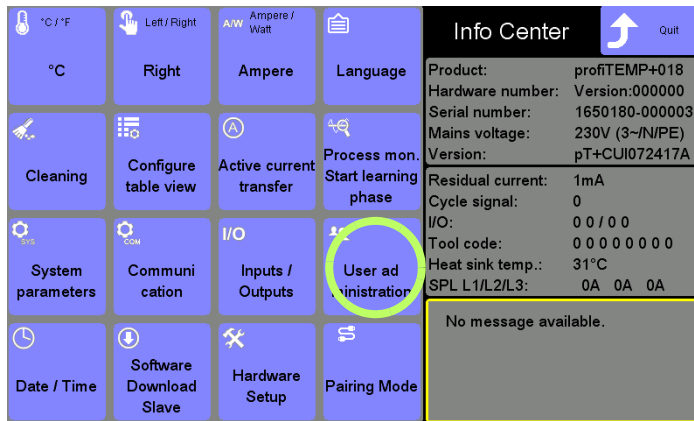


The function is **only** available for user **admin**, who has to be logged in (see chapter ↗Login/Logout (page 27)).



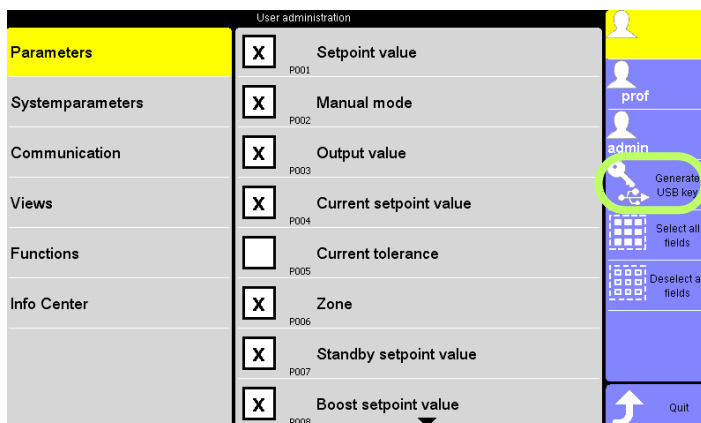
Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

User Administration



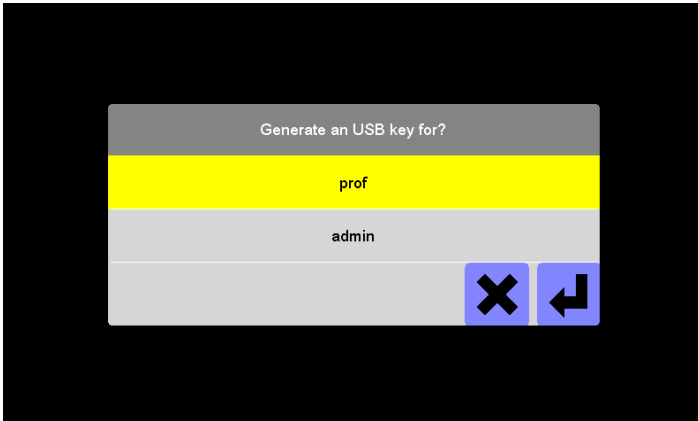
Press key

On touch the key appears selected.



View after display of dialog

Press key



The USB key to generate can be chosen out of a list.

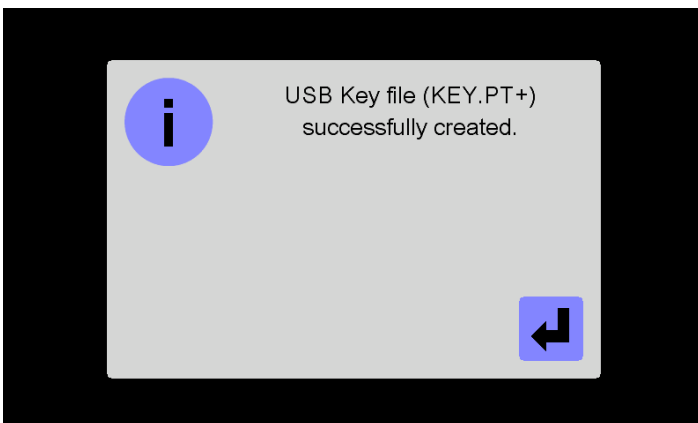
Example user prof



A file (KEY.pT+) is exported on a connected USB stick. Only one file is permissible per USB stick. The lastly exported key can be used for login (see chapter 7 Login/Logout (page 27)).



Is the file already existing on the USB stick, the file can be overwritten after confirmation.





Confirm




Quit dialog

### 14.1.8 Configure table view

<p><b>Description</b></p> 	<p>In the table view is alternatively shown</p> <ul style="list-style-type: none"> <li>■ Current actual value</li> <li>■ Active Setpoint Value</li> <li>■ Actual value</li> <li>■ Residual current</li> <li>■ Current process monitoring operating point (temporary storage)</li> </ul> <p>as well as other selectable zone parameters. The settings in table are valid for the whole hot runner controller.</p>
<p><b>How it works</b></p>	<p>Call by key in Infocenter. The table is configured by the user by marking of status and/or parameters.</p>
<p><b>What good is it</b></p>	<p>Individual combinable table to view status and/or parameters of all zones.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>

 For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.


 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

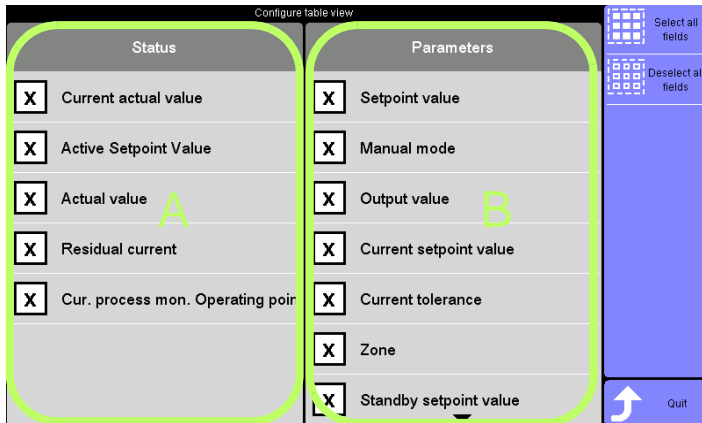


Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

Configure table view

Info Center				Quit
°C / °F	Left / Right	A/W Ampere / Watt	Language	Product: profiTEMP+018
°C	Right	Ampere	Language	Hardware number: Version:000000
Cleaning	Configure table view	Active current transfer	Process mon. Start learning phase	Serial number: 1650180-000003
System parameters	Communication	I/O Inputs / Outputs	User administration	Mains voltage: 230V (3~/N/PE)
Date / Time	Software Download Slave	Hardware Setup	Pairing Mode	Version: pT+CUi072417A
				Residual current: 1mA
				Cycle signal: 0
				I/O: 0 0 / 0 0
				Tool code: 0 0 0 0 0 0 0 0
				Heat sink temp.: 31°C
				SPL L1/L2/L3: 0A 0A 0A
				No message available.

 Press key  
On touch the key appears selected.



[A] Status

[B] Parameters



Further details on data entry see chapter ↗Numeric keypad [C] (page 49).  
For further details on communication parameters see Manual Parameters **hotcontrol CDT+**.



Select the cross, to delete it.



Select the empty field, to set a cross.

Sets in all fields the cross

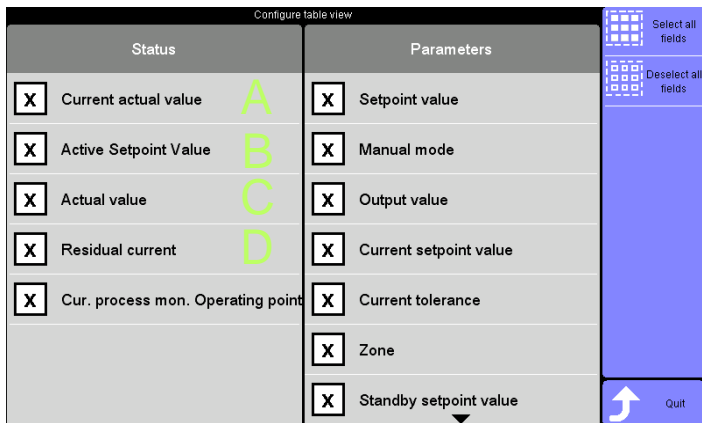


Select all fields

Deletes in all fields the cross



Deselect all fields



All status and all parameters are selected.

Zone	A	B	C	D
Zone	Current actual value	Active Setpoint Value	Actual value	Residual current
1 Zone 1	0.2	100.0	98.1	0
2 Zone 2	0.2	100.0	99.7	0
3 Zone 3	0.2	100.0	98.3	0
4 Zone 4	0.2	100.0	97.4	0
5 Zone 5	0.2	100.0	100.6	0
6 Zone 6	0.2	100.0	100.9	0
7 Zone 7	0.0	100.0	29.7	0
8 Zone 8	0.0	100.0	29.7	0
9 Zone 9	0.0	100.0	29.9	0
10 Zone 10	0.0	100.0	29.7	0
11 Zone 11	0.0	100.0	29.7	0
12 Zone 12	0.0	100.0	29.7	0



The table view looks as adjoining.

Navigation in the table view by see chapter ↗Scroll (page 20)



Configure table view

Status	Parameters
<input type="checkbox"/> Current actual value	<input checked="" type="checkbox"/> Setpoint value <b>C</b>
<input type="checkbox"/> Active Setpoint Value	<input checked="" type="checkbox"/> Manual mode <b>D</b>
<input checked="" type="checkbox"/> Actual value <b>A</b>	<input checked="" type="checkbox"/> Output value
<input checked="" type="checkbox"/> Residual current <b>B</b>	<input checked="" type="checkbox"/> Current setpoint value
<input type="checkbox"/> Cur. process mon. Operating point	<input checked="" type="checkbox"/> Current tolerance
	<input checked="" type="checkbox"/> Zone
	<input checked="" type="checkbox"/> Standby setpoint value

Quit



2 status [A, B] and all parameters are selected.

24.08.2016 11:48:22 | Table

Zone	Actual value <b>A</b>	Residual current <b>B</b>	P001 Setpoint value <b>C</b>	P002 Manual mode <b>D</b>
1 Zone 1	100.3	0	100.0	0 - Off
2 Zone 2	100.5	0	100.0	0 - Off
3 Zone 3	100.3	0	100.0	0 - Off
4 Zone 4	99.6	0	100.0	0 - Off
5 Zone 5	100.4	0	100.0	0 - Off
6 Zone 6	100.3	0	100.0	0 - Off
7 Zone 7	29.9	0	100.0	0 - Off
8 Zone 8	29.9	0	100.0	0 - Off
9 Zone 9	29.9	0	100.0	0 - Off
10 Zone 10	29.9	0	100.0	0 - Off
11 Zone 11	29.9	0	100.0	0 - Off
12 Zone 12	29.9	0	100.0	0 - Off

Navigation icons: Program, Mold Snapshot, Current transfer, Views, Off, Boost, Standby, Logout, Alarm




The table view looks as adjoining.




Navigation in the table view by see chapter ↗Scroll (page 20)



Quit dialog

### 14.1.9 Software Download Slave

<p><b>Description</b></p> 	<p>Continuously development and improvement of the products result in updates in form of HEX files for single components. With <b>hotcontrol cDT+</b> the software for the single components can easily be updated.</p>
<p><b>How it works</b></p>	<p>Load current firmware for HTC-Card (Slave) from homepage on USB stick and insert USB stick in <b>hotcontrol cDT+</b>. The whole USB stick is read. Call by key in Infocenter.</p>
<p><b>What good is it</b></p>	<p><b>hotcontrol cDT+</b> may be adapted quickly at any time, concerning bug fixes as well as new functionality.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>

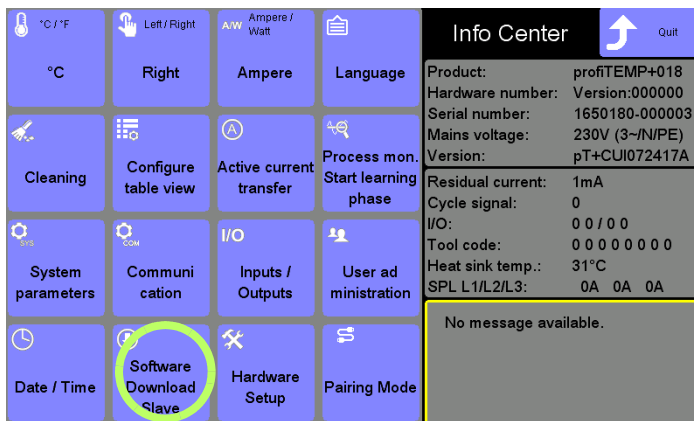
Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

Call up homepage [www.hotset.com](http://www.hotset.com) and search there for the product. In the download area you find the latest firmware.





Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

Software Download Slave



Press key

On touch the key appears selected.

Is no USB stick connected, a message is shown.

Type	File	Component
HTC 0615		

Please select type.



Select type.

Type	File	Component
HTC 0615	HTC_06952316A	<input type="checkbox"/> Node: 1 - HTC 06951816A <input type="checkbox"/> Node: 2 - HTC 06951816A <input type="checkbox"/> Node: 3 - HTC 06951816A

Please select the file.



The selected type is marked.  
Files for the firmware update, appropriate to the component, are displayed in a list and can be selected by the user.  
Select file.

Type	File	Component
HTC 0615	HTC_06952316A	<input type="checkbox"/> Node: 1 - HTC 06951816A <input checked="" type="checkbox"/> Node: 2 - HTC 06951816A <input type="checkbox"/> Node: 3 - HTC 06951816A

Please select the components.



The selected file is marked.  
Select component.



Select all fields

Instead of selection / deselection of single components



Deselect all fields

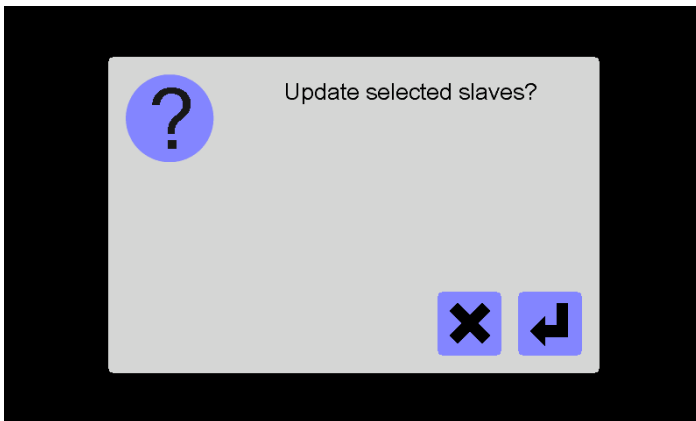
Type	File	Component
HTC 0615	HTC_06952316A	<input type="checkbox"/> Node: 1 - HTC 06951816A <input checked="" type="checkbox"/> Node: 2 - HTC 06951816A <input type="checkbox"/> Node: 3 - HTC 06951816A

Ready for download.



The selected component is marked.

Press key.

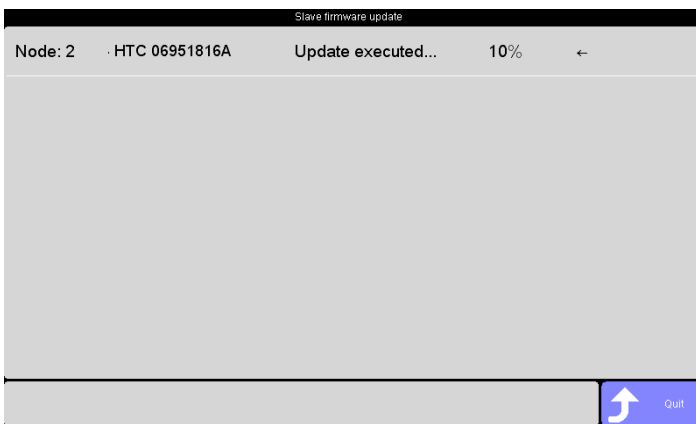


Confirm download



HEX File is being loaded and tested. Please wait.

Adjoining message appears.




Update is executed.  
Wait for end of function-

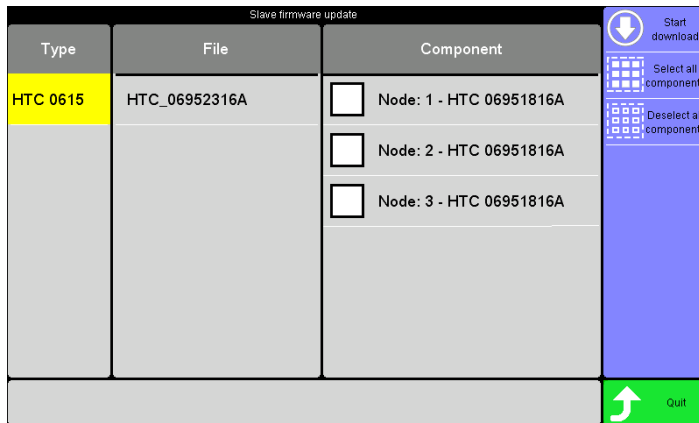



Waiting for slave to boot up...

Note appears.  
Please follow instructions.





 Display of result.  
Quit dialog



 Quit dialog  
or make a new selection.

### 14.1.10 Hardware Setup

<p><b>Description</b></p> 	<p>The function contains the following calls</p> <ol style="list-style-type: none"> <li>1) ↗Scan (page 117)</li> <li>2) ↗Read software version (page 118)</li> <li>3) ↗Load factory setting (page 119)</li> <li>4) ↗Fan test (page 120)</li> </ol>
<p><b>How it works</b></p>	<p>Call</p> <ol style="list-style-type: none"> <li>1) ↗Scan (page 117): Scan determines the currently existing firmware on the HTC-cards and the connected HTC-cards to the hot runner controller and the result is stored in the configuration.</li> <li>2) ↗Read software version (page 118): Read software version determines for the existing HTC-cards in the configuration the currently firmware on the HTC-card.</li> <li>3) ↗Load factory setting (page 119): restores the original condition of the delivery state of the device.</li> <li>4) ↗Fan test (page 120): Fan test checks the built-in fans in the hot runner controller and proofs their function.</li> </ol>
<p><b>What good is it</b></p>	<ol style="list-style-type: none"> <li>1) When adding or removing HTC-card, a new configuration can be created.</li> <li>2) In case of a problem, it can easily be detected whether the current firmware is on the HTC-Card. If not, the firmware can be updated, see chapter ↗Software Download Slave (page 112)</li> <li>3) The system is reset to a checked and executable status. All in between entered settings are overwritten.</li> <li>4) Function of the fans can be proofed.</li> </ol>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>

 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

Hardware Setup

The screenshot shows the Infocenter interface with a grid of menu items. The 'Hardware Setup' item is circled in red. The 'Info Center' panel on the right displays the following data:

Product:	profitemp+018
Hardware number:	Version:000000
Serial number:	1650180-000003
Mains voltage:	230V (3~/N/PE)
Version:	pT+CUi072417A
Residual current:	1mA
Cycle signal:	0
I/O:	0 0 / 0 0
Tool code:	0 0 0 0 0 0 0
Heat sink temp.:	31°C
SPL L1/L2/L3:	0A 0A 0A

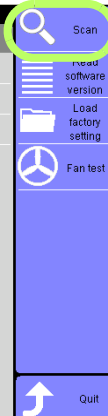



Press key

On touch the key appears selected.

Scan

Hardware Setup		
NodeID	Component	Version
1	HTC06	
2	HTC06	
3	HTC06	

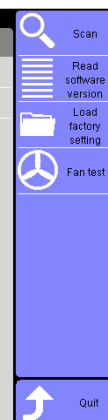


Press key  
 On touch the key appears selected.



Scan determines the currently existing firmware on the HTC-cards and the connected HTC-cards to the hot runner controller and the result is stored in the configuration.

Hardware Setup		
NodeID	Component	Version
1	HTC06	HTC 06952516A
2	HTC06	HTC 06952516A




For NodeID 1 & 2 the components were determined.  
 For NodeID 3 no component can be determined (HTC-card e.g. was removed).  
 Configuration was changed.



Quit dialog or continue with...

**Read software version**

Hardware Setup		
NodeID	Component	Version
1	HTC06	
2	HTC06	
3	HTC06	

Press key  
 On touch the key appears selected.



Read software version determines the currently available firmware on the configured HTC-Card.

Hardware Setup		
NodeID	Component	Version
1	HTC06	HTC 06952516A
2	HTC06	HTC 06952516A
3	HTC06	---



For NodeID 1 & 2 version could be read. For NodeID 3 version could not be read (HTC-Card e.g. removed).

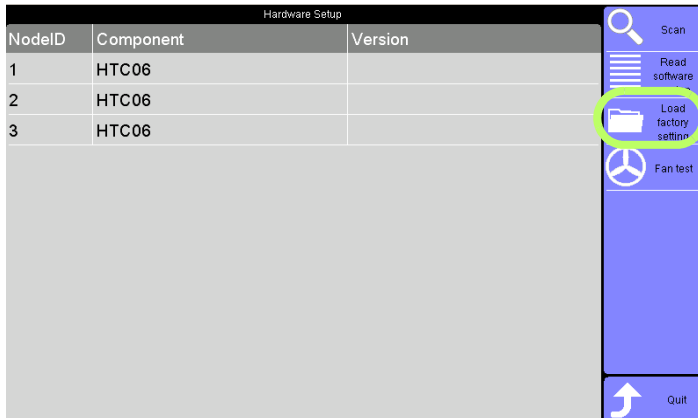
Configuration remains.



Quit dialog or continue with...



Load factory setting



Press key



On touch the key appears selected.



The factory setting defines settings for

- Parameters
- System parameters
- Communication parameters
- In-/Outputs

directly at the time of delivery. This factory setting is available for the under admin to load.

These settings are loaded from **hotcontrol cDT+** into the Hot Runner Controller.



After loading the factory setting the device will be restarted.  
Load factory setting?



Reject



Confirm



If the factory setting is loaded a RESTART is executed by **hotcontrol cDT+**.



Factory setting restored. The device will be restarted.



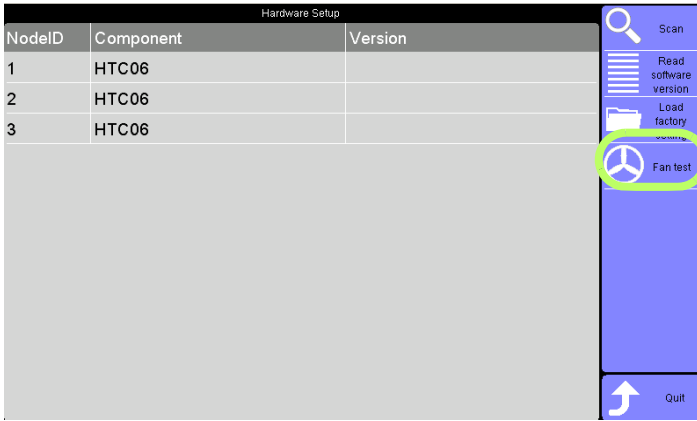
Restart



Further process see chapter 7 Immediately after Switch ON (page 11).

### Fan test

Hardware Setup		
NodeID	Component	Version
1	HTC06	
2	HTC06	
3	HTC06	



Press key

On touch the key appears selected.





Fan test checks the built-in fans in the hot runner controller and proofs their function. The checked fans are shown. Wait for end of function.



Quit dialog or continue with...

### 14.1.11 Language

<p><b>Description</b></p> 	<p>In the default the languages German and English are available. One more language can be activated.</p>
<p><b>How it works</b></p>	<p>Call by key in Infocenter. The languages German and English in the default are selected. Another 3. language can be activated after loading by USB stick and then be selected. Language files are available on the homepage in the download area (see chapter ↗Update language-file (page 175)).</p>
<p><b>What good is it</b></p>	<p><b>hotcontrol cDT+</b> is quickly customizable to the language of the user.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>

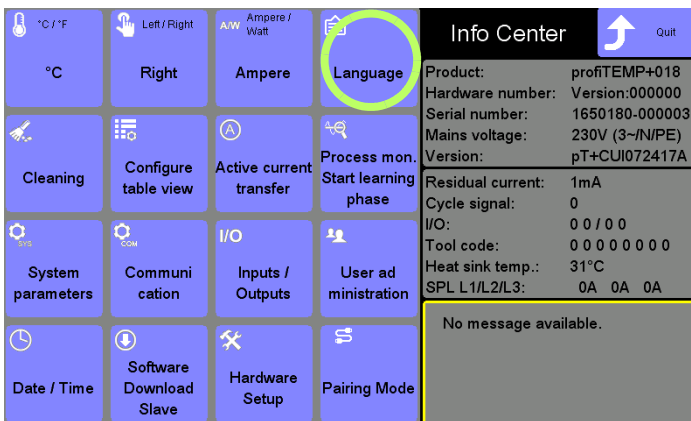
 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

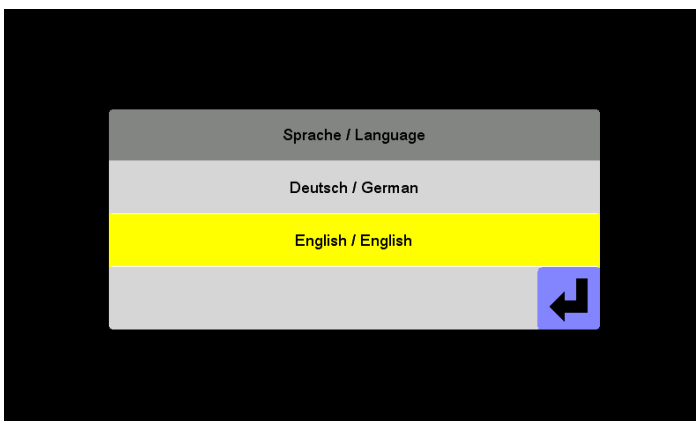


Set language from Deutsch to English

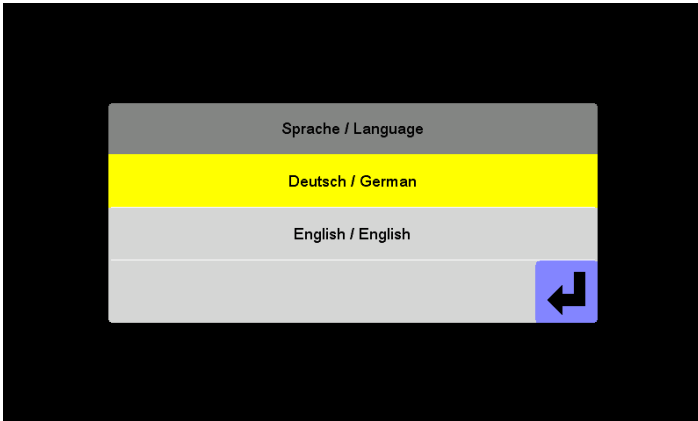


Press key

On touch the key appears selected.



There are 2 default languages available (activation of another 3. language by USB stick).  
The current settings are shown.



The user selects the preferable language out of a list.





The selected language is immediately activated for the system.



Quit dialog

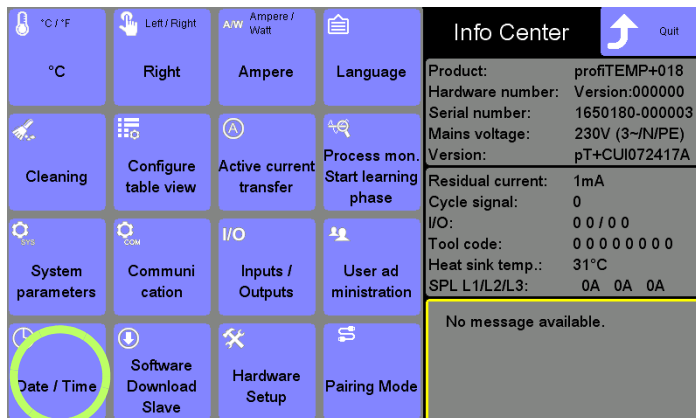
14.1.12 Date / Time

<p><b>Description</b></p> 	<p>Setting of date / time for all time stamped data in <b>hotcontrol cDT+</b>.</p>
<p><b>How it works</b></p>	<p>Call by key in Infocenter.</p>
<p><b>What good is it</b></p>	<p>The correct time is added to the time-stamped data and trends in <b>hotcontrol cDT+</b>.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>

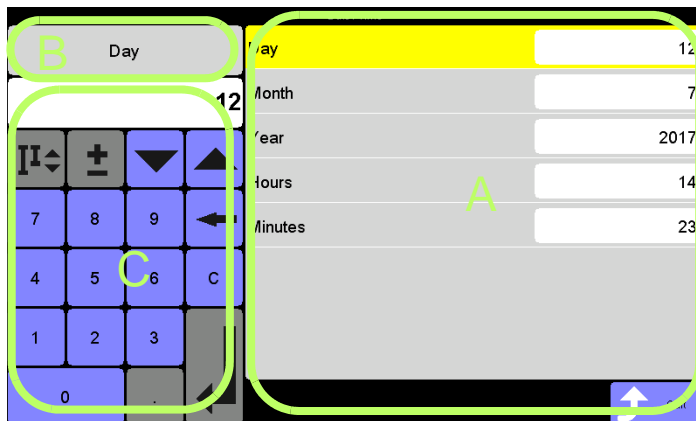
 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



Press key  
On touch the key appears selected.



[A] Selection of the field to be changed (day, month, year, hours, minutes) in the right area

[B] Selection is shown upper left.

[C] By the displayed numeric keypad the specification of the new value for the selected field can be done.

In numeric keypad



Confirm entry





Quit dialog



The changed date / time is shown in the header.  
All time stamped data get this setting.

### 14.1.13 Inputs / Outputs

<p><b>Description</b></p> 	<p>The simplest method to communicate with the injection molding machine is by the digital inputs (2) and digital outputs (1; [1 further optional digital output]) of the Hot Runner Controller.</p> <p>Digital inputs are used to enable controller functions by external signal sources (for example, injection molding machine, etc.)</p> <ul style="list-style-type: none"> <li>▪ Adjustable High / Low active</li> <li>▪ Control via signal level or signal edge</li> </ul> <p>Digital outputs are used for</p> <ul style="list-style-type: none"> <li>▪ Transmission of alarm conditions in the hot runner from the controller to the injection molding machine or to a signal source (lights, horn, etc.)</li> <li>▪ Identification of controller internal fault conditions (for example, "data fault")</li> <li>▪ Identification of functional states, in which the hot runner controller is</li> <li>▪ Multiple states/functions may be issued by or-function.</li> <li>▪ Adjustable High / Low active</li> </ul>
<p><b>How it works</b></p>	<p>The hot runner controller issues the signal for enabling of the machine by this. Hereby the proper status of the hot runner is signalized to the injection molding machine.</p> <p>The hot runner controller receives for example signals for Boost and Standby mode from the injection molding machine.</p> <p>The function of the digital inputs and the digital outputs can easily be customized.</p>
<p><b>What good is it</b></p>	<p>The enabling of the machine guarantees reliability of the production process, because the enabling is only given to the machine, when the conditions are proper in the hot runner.</p> <p>Also all other alarm status may be linked with the machine to react on critical alarm status immediately.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter Parameter digital inputs Parameter digital outputs</p>
	<p>For further details on ↗Inputs / Outputs (page 125) see Manual Parameters <b>hotcontrol cDT+</b>.</p>

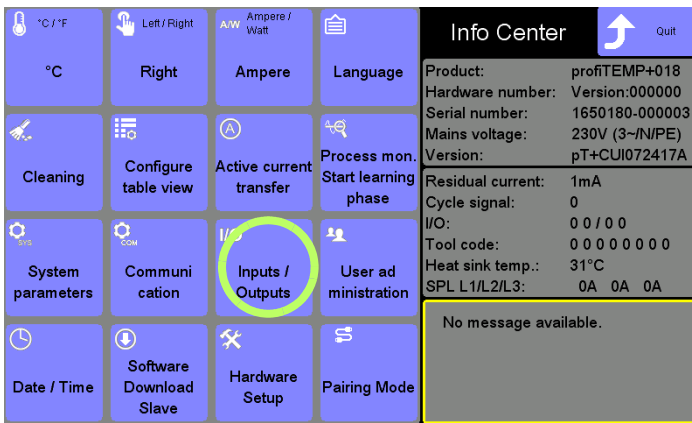
### Digital inputs



Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)

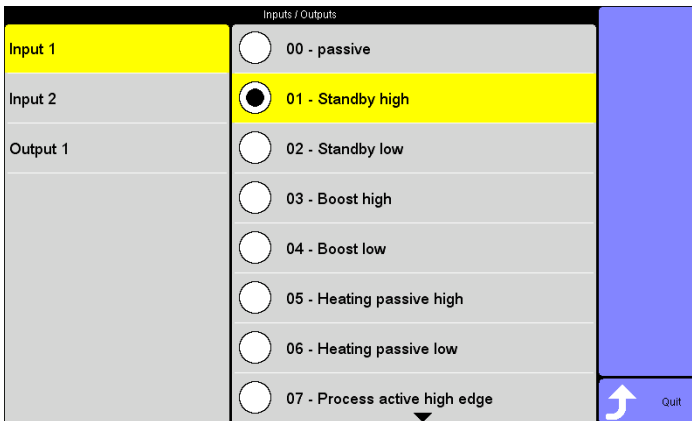


Display Infocenter by ↗Wipe down (page 15) in the header over screen edge

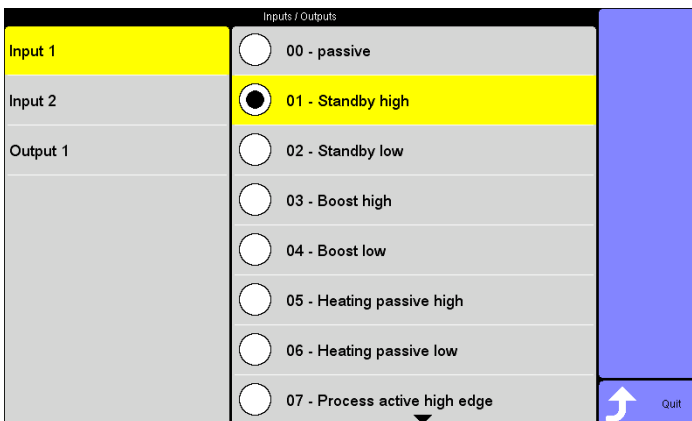


Press key

On touch the key appears selected.



Setting Input1



By selection of the filed parameter (here for Input 1) 1 characteristic can be activated and/or deactivated.



Characteristic active



Characteristic deactive





Quit dialog



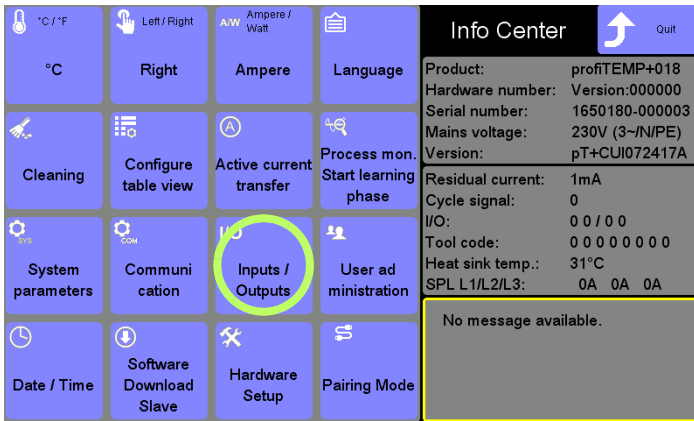
Only 1 characteristic can be set per digital input.  
The selectable characteristics for input 1 & 2 are identical.

Digital outputs

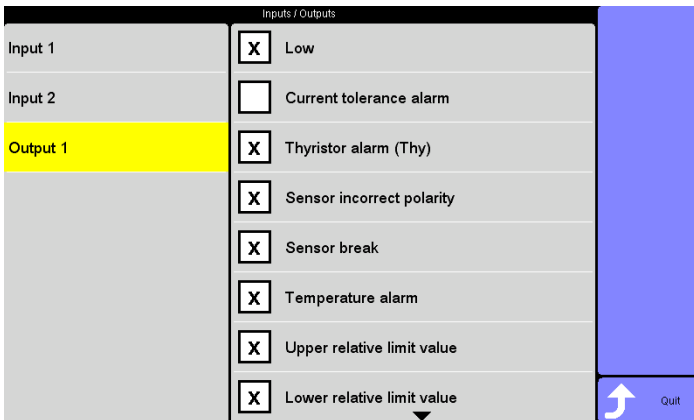
Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



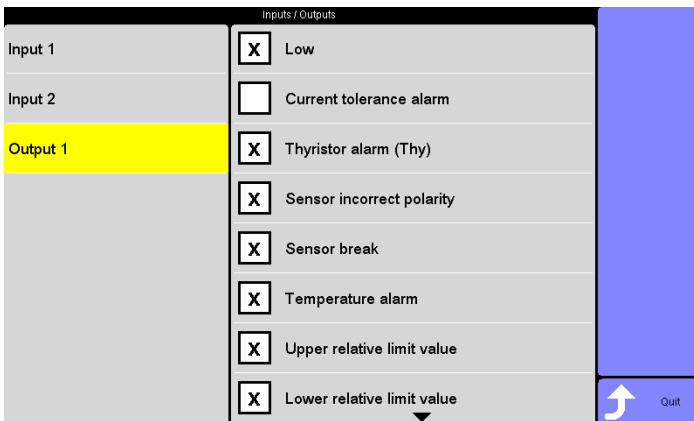
Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



Press key On touch the key appears selected.



Setting output 1



By selection of the field of the parameter (here at output 1), several characteristics can be added from the list of value by activating and be deleted by deactivating the cross.



Select the cross, to delete it.



Select the empty field, to set a cross.



Quit dialog




The characteristics per output can be combined optionally with each other. The selectable characteristics for output 1 & 2 [optional] are identical.

### 14.1.14 Start learning phase of process monitoring

Information on function call see chapter ↗Process Monitoring (page 160).

### 14.1.15 Cleaning

<p><b>Description</b></p> 	<p>By using the display Control&amp;User Interface CUI07 there occur fingerprints on the display. These should be removed from time to time.</p>
<p><b>How it works</b></p>	<p>By key the Control&amp;User Interface CUI07 is desensitized for maximum 15 s and accepts no keystrokes. During this time the display can be cleaned with a lint-free micro-fiber cloth. Cleaning should be done with light circular movements possible without pressure on the display. For tough dirt, use a cloth lightly moistened with water.</p>
<p><b>What good is it</b></p>	<p>Incorrect entries by and during cleaning are thus avoided.</p>
<p><b>Setting by</b></p>	<p>Key in Infocenter</p>



Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



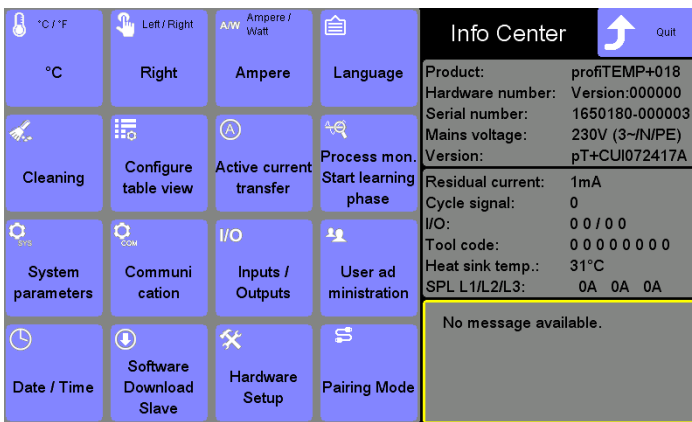
Press key

On touch the key appears selected.

User admin



Timer is running



After the timer elapsed the Infocenter is displayed again.

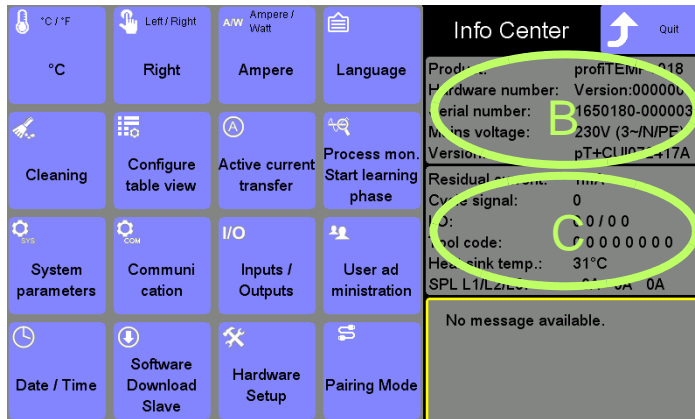


Quit dialog

## 14.2 Product information / Status Info Process & Hot runner controller



Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



[B] ↗Product information (page 131)

[C] ↗Status Info Process & Hot runner controller (page 131)

### Product information

Product	hotcontrol cDT+ Type
Hardware number	hotcontrol cDT+
Serial number	hotcontrol cDT+
Mains voltage	hotcontrol cDT+
Version	Firmware of Control&User Interfaces CUI07



In case of any problem, please contact the manufacturer / supplier with the above noted details.


### Status Info Process & Hot runner controller


Residual current	See Chapter ↗Residual current RC (page 81)	
Cycle signal	Display of number of injection cycles indicated by external signal	
I/O	See Chapter ↗Inputs / Outputs (page 125)	
Tool code	See Chapter ↗Allocation of program and tool coding (page 65)	Only for activated option
Heat sink temperature	See parameter ↗[SP10]Heat sink limit value (page 193)	
SPL L1/L2/L3	See parameter ↗[SP21]Current limit SPL L1/L2/L3 (page 193)	




Quit dialog

### 14.3 Messages

<p><b>Description</b></p> 	<p>The messages function provides the user of hot runner controllers with an optimal utilization of the scope of functions on the controller.</p>
<p><b>How it works</b></p>	<p>During operation the hot runner controller check continuously miscellaneous characteristics and status and determines, whether this message is shown in the ↗Infocenter (page 89).</p>
<p><b>What good is it</b></p>	<p>The message in ↗Infocenter (page 89) indicates problems or conditions to the user and proposes an action to correct the problem. A part of the messages can directly be acknowledged here and the open issue be solved.</p>
<p><b>Setting by</b></p>	<p>n.a.</p>

 For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

 Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



There is at least one message existing.



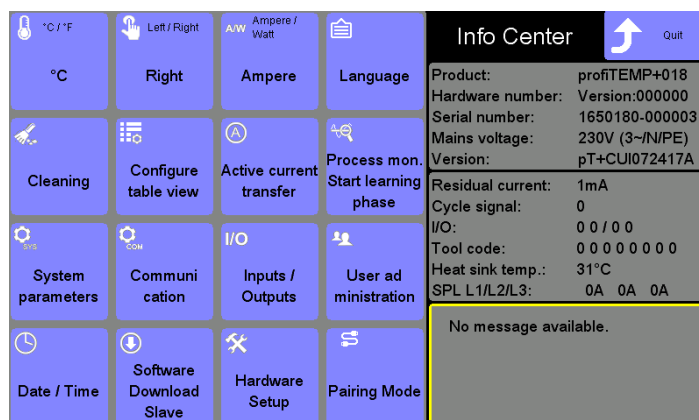
Display Infocenter by ↗Wipe down (page 15) in the header over screen edge



Activate current transfer

Press key

Message	Current transfer active	Appears briefly
---------	-------------------------	-----------------



There are no more messages.

See also chapter ↗Activate current transfer (page 96)

### 14.3.1 Possible messages

The following messages and measures are available in the ↗Infocenter (page 89).

<b>Message</b>	<b>Current setpoint value is not set!</b>
<b>Proposed measure</b>	Activate current transfer?
<b>Details</b>	Current setpoint value = 0.0 A (see parameter ↗[P004]Current setpoint value (page 191)) See Chapter ↗Activate current transfer (page 96)


<b>Message</b>	<b>Process monitoring not activated</b>
<b>Proposed measure</b>	Activate process monitoring?
<b>Details</b>	Is the process monitoring not activated, although the learning phase is terminated, the user receives this message. See Chapter ↗Process Monitoring (page 160)


<b>Message</b>	<b>Wrong zone type set</b>
<b>Proposed measure</b>	Take over zone type?
<b>Details</b>	The zone type was identified as wrong.
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>■ Sensor short-circuit (TCs) is activated (see parameter ↗Inputs / Outputs (page 125))</li> <li>■ the identification is terminated (see parameter ↗[P030]Identification (page 191))</li> </ul>

<b>Message</b>	<b>Current value outside tolerance band</b>
<b>Proposed measure</b>	Activate current transfer?
<b>Details</b>	E.g. after change of tool See Chapter ↗Activate current transfer (page 96)

<b>Message</b>	<b>Sensor error existent</b>
<b>Proposed measure</b>	Search and activate leading zone?
<b>Details</b>	At the auto leading zone operation (parameter ↗[P019]Automatic leading zone operation (page 191) = ON) a sensor error is detected. At confirmation of the proposed measure, for the zone with the sensor errors an adequate zone is searched and set as leading zone.


<b>Message</b>	<b>hotcontrol cDT+ by CAN connected. Zone numbers are overlapping. Adjust parameter [SP06].</b>
<b>Proposed measure</b>	
<b>Details</b>	The zones in a hot runner controller are consecutively numbered starting with 1. Are several hot runner controllers connected to each other, here (see parameter ↗[SP06]Offset zone numbering (page 193)) in the hot runner controller the zone is entered, with which the zone numbering starts in the hot runner controller, to have unique zones numbers over all hot runner controllers.

<b>Message</b>	<b>Error at Pairing Mode, hot runner controller in operation</b>
<b>Details</b>	In order to prevent a switched-on or in-production hot runner controller from being connected, the latter rejects the connection request.
<b>Remedy</b>	On the requested hot runner controller, ensure that the heaters are switched off before a connection can be established via Pairing Mode.
	Further details on function see chapter .↗Pairing Mode (page 135)


<b>Message</b>	<b>Timeout at Pairing Mode</b>
<b>Details</b>	The hot runner controller#Pairing-Mode-active (see parameter ↗[CP24]Pairing Mode (page 194) = ON) tries to establish a connection with the hot runner-controller specified via IP-address by the parameters [CP25] - [CP28]. If this does not work, this message is displayed. If a connection has already been interrupted, the CAN message is displayed in the zone display.
<b>Remedy</b>	Check network cable Check settings (Parameter [CP25] - [CP28])
	Further details on function see chapter .↗Pairing Mode (page 135)


<b>Message</b>	<b>Error at Pairing Mode, hot runner controller already connected</b>
<b>Details</b>	If a hot runner controller is already in Pairing Mode with another hot-runner controller, this message appears.






<b>Remedy</b>	On the requested hot runner controller, ensure that the Pairing Mode is terminated with the other hot runner controller before another / a new connection can be established via Pairing Mode.
	Further details on function see chapter <a href="#">Pairing Mode</a> (page 135)

## 14.4 Pairing Mode

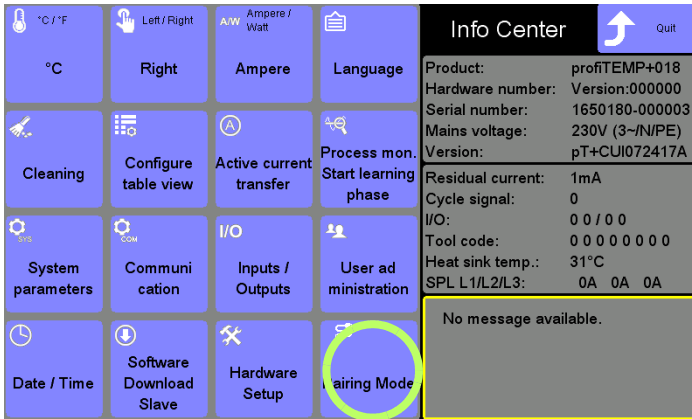
<b>Description</b> 	Two hot runner controllers of type <b>hotcontrol cDT+</b> can be connected by Pairing Mode via Ethernet. The hot runner controller where the Pairing Mode is activated (Hot runner controller#Pairing-Mode-active) takes control / operation for the requested hot runner controller to couple (Hot runner controller#Pairing-Mode-actuator).
<b>How it works</b>	<ul style="list-style-type: none"> <li>▪ Calling Pairing Mode via communication parameters or in Infocenter via key. Thus, this hot runner controller becomes hot runner controller#Pairing-Mode-active.</li> <li>▪ Enter the IP-address of the hot runner controller with which the Pairing Mode should be established</li> <li>▪ Switch Pairing Mode on</li> </ul> <p>Messages for Pairing Mode in hot runner controller#Pairing-Mode-active see chapter <a href="#">Messages</a> (page 132).</p>
<b>What good is it</b>	With the Pairing Mode the number of zones of a hot runner controller <b>hotcontrol cDT+</b> can be expanded very quickly and easily. The hot-runner controller, which has been created by the coupling, can have a maximum of 192 zones (126 zones can be added at maximum via Pairing Mode).
<b>Setting by</b>	Key in Infocenter

	<ul style="list-style-type: none"> <li>▪ The hot runner controller#Pairing-Mode-actuator must not be in operation.</li> <li>▪ The image of the hot runner controller generated by Pairing Mode is only held in the hot runner controller#Pairing-Mode-active.</li> <li>▪ After the Pairing Mode has been canceled, the previous settings of the hot runner controller#Pairing-Mode-actuator are available again.</li> <li>▪ With the functions <a href="#">Program</a> (page 61), <a href="#">MoldCheck</a> (page 150), <a href="#">MoldSnapshot</a> (page 67) the resulting hot runner controller works like one device.</li> <li>▪ The settings for SPL (see parameter <a href="#">[SP21]Current limit SPL L1/L2/L3</a> (page 193)) are device specific.</li> </ul>
---	---

	Whether and which keys are enabled for the user, see chapter <a href="#">User Administration</a> (page 101)
 	When Pairing Mode is active, this is displayed in the header. See <a href="#">[CP24]Pairing Mode</a> (page 194) <> 0



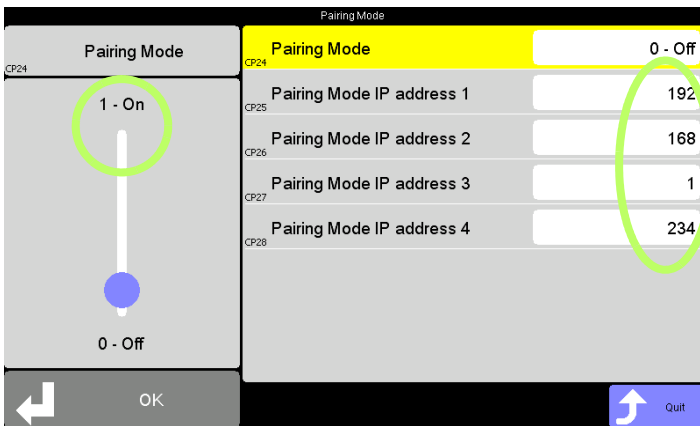
Display Infocenter by  $\nearrow$ Wipe down (page 15) in the header over screen edge



Press key

On touch the key appears selected.

User admin



1. Enter the IP address of the hot runner controller to be connected.

2. Switch Pairing Mode on



The hot runner controller to be connected takes over the settings for the parameters from the hot runner controller#Pairing-Mode-active.

Example: If the heating is switched on, the heating is switched on immediately after coupling for the coupled zones.

**Check parameters possibly after Pairing BEFORE switching on hot runner controller.**

## Hot runner controller#Pairing-Mode-active

27.06.17 14:25:40		Standard		S		00000000		Pro gram	
1 Zone 1	2 Zone 2	3 Zone 3	4 Zone 4	5 Zone 5	6 Zone 6	7 Zone 7	8 Zone 8	9 Zone 9	10 Zone 10
100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C
100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C
11 Zone 11	12 Zone 12	13 Zone 13	14 Zone 14	15 Zone 15	16 Zone 16	17 Zone 17	18 Zone 18	19 Zone 19	20 Zone 20
100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	99.9 °C	100.4 °C
100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C
21 Zone 21	22 Zone 22	23 Zone 23	24 Zone 24	25 Zone 25	26 Zone 26	27 Zone 27	28 Zone 28	29 Zone 29	30 Zone 30
100.0 °C	99.9 °C	100.0 °C	100.1 °C	99.3 °C	99.1 °C	98.4 °C	98.4 °C	99.6 °C	99.3 °C
100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C
31 Zone 31	32 Zone 32	33 Zone 33	34 Zone 34	35 Zone 35	36 Zone 36	37 Zone 37	38 Zone 38	39 Zone 39	40 Zone 40
100.9 °C	100.7 °C	100.9 °C	100.7 °C	100.9 °C	100.6 °C	100.9 °C	100.9 °C	100.9 °C	100.5 °C
100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C	100.0 °C
41 Zone 41	42 Zone 42								
100.5 °C	100.5 °C								
100.0 °C	100.0 °C								

The number of zones is expanded (example here: 18 + 24 = 42 zones).

In the header, the embedded symbol indicates that the hot runner controller is in Pairing Mode.

Settings and control for all zones from this hot runner controller.

## Display Hot runner controller#Pairing-Mode-actuator

27.06.17 14:16:45		Pairing Mode		S					
19 Zone 19	20 Zone 20	21 Zone 21	22 Zone 22	23 Zone 23	24 Zone 24	25 Zone 25	26 Zone 26	27 Zone 27	28 Zone 28
100.1 °C	98.4 °C	99.9 °C	99.8 °C	100.0 °C	99.6 °C	96.2 °C	96.2 °C	96.8 °C	96.8 °C
0.0 %	4.0 %	8.4 %	6.9 %	6.6 %	9.7 %	11.7 %	11.7 %	10.1 %	10.1 %
0.0 A	0.2 A	0.2 A	0.2 A	0.2 A	0.2 A	1.0 A	1.0 A	1.0 A	1.0 A
29 Zone 29	30 Zone 30	31 Zone 31	32 Zone 32	33 Zone 33	34 Zone 34	35 Zone 35	36 Zone 36	37 Zone 37	38 Zone 38
96.2 °C	96.1 °C	96.0 °C	96.0 °C	96.0 °C	96.0 °C	96.0 °C	96.0 °C	96.0 °C	96.0 °C
11.7 %	12.0 %	9.8 %	9.8 %	9.8 %	9.8 %	9.8 %	9.7 %	9.7 %	9.8 %
1.0 A	1.0 A	1.0 A	1.0 A	1.0 A	1.0 A	1.0 A	1.0 A	1.0 A	1.0 A
39 Zone 39	40 Zone 40	41 Zone 41	42 Zone 42						
96.0 °C	95.9 °C	95.9 °C	95.9 °C						
9.7 %	10.0 %	10.2 %	10.2 %						
1.0 A	1.0 A	1.0 A	1.0 A						

The first zone receives the next consecutive zone number from the hot runner controller#Pairing-Mode-active (example here: 19).




In the header, the embedded symbol and the text indicates that the hot runner controller is in Pairing Mode.

Depending on the zone number, the actual value, the output value and the current are displayed. The control elements are hidden away, since the hot runner controller#Pairing-Mode-actuator operates in actuator mode only. No operation on this device is possible.



## 15 Functions

In this chapter functions and corresponding parameters of hot runner controllers are described.

### 15.1 Heating current measuring - and - monitoring

<b>Description</b> 	<p>The objective of heating current measuring and monitoring is:</p> <ul style="list-style-type: none"> <li>■ to determine heating currents by measuring</li> <li>■ to compare measured values with setpoint values and tolerance</li> <li>■ to execute a plausibility check</li> </ul> <p>The heating current measuring is implemented in a fixed time raster.</p>
<b>How it works</b>	<p>Beside the display of the active heating currents, the heating current measuring provides information on the heater's condition (total fail, partial fail if heaters in parallel) and monitors current data considering a tolerance band.</p> <p>It monitors power controller condition and reports an alarm for continuously running heating output (e.g. permanently short-circuit SSR's), which can cause damage from overheating.</p> <p>It supports a number of controller functions. For example, bad adjustments of control parameters can be avoided because the automatic parameter identification (auto tuning) is only started if a corresponding heating current is recognized in the control zone, i.e. when it is certain that the zone is ready for heating. Else, the starting of the identification function is delayed until a heating current is recognized.</p>
<b>What good is it</b>	<p>Hence, a wrongful adaptation is prevented without user input or additional software.</p>
<b>Setting by</b>	<p>↗Automatic ramp (page 139)          ↗[P005]Current tolerance (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p>
<b>Description</b> 	<p>Heating current measuring is standard in each hot runner controller. The heating current measuring is done by so called current transformers.</p> <p>The hot runner controller <b>hotcontrol cDT+</b> can display residual current. This indicates important information on the status of the heater in the hot runner and gives early enough notice of a damage.</p>
<b>What good is it</b>	<p>One can react immediately and longer downtimes due to unnecessary tool removal and repair are omitted.</p>

## 15.2 Automatic ramp

 <p><b>Description</b></p>	<p>The different dimensions of zones in the hot runner cause different heating-up times and different temperature levels. That means, that the nozzles have already reached the setpoint value and the manifold zones are still far from.</p> <p>Herefrom result temperature dependent expansions of steel, which cause unwanted mechanical tensions.</p>
<p><b>How it works</b></p>	<p>The automatic ramp function was developed to eliminate the causes of mechanical tensions. All zones are uniformly heated up. All zones orientate themselves automatically on the slowest zone. Its actual value is a reference for the setpoint value for the other zones.</p>
<p><b>What good is it</b></p>	<p>With this measure all zones remains at heating-up automatically on the same temperature level. The hot runner is disburdened and protected. Hereby damage is reduced and service intervals are extended. Maintenance costs are reduced.</p>
<p><b>Setting by</b></p>	<p>↗[SP02]Automatic ramp tolerance band (page 193)          ↗[SP03]Automatic ramp setpoint value change (page 193)          ↗[P022] Automatic ramp (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p> <p>Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)</p>

The maximal temperature difference of each zone based on the reference zone during heating-up is configurable (parameter (a)). In the event a zone exceeds this limit the output value will be corrected.

A zone is taken off the link of the automatic ramp, if

- a sensor error (e.g. FAL) occurs in the zone
- the zone is in manual mode
- the manual temperature ramp is active
- the zone is passive

The automatic ramp function is triggered 5 K before reaching the setpoint values; the zones heat up to the final setpoint value without any output value intervention.

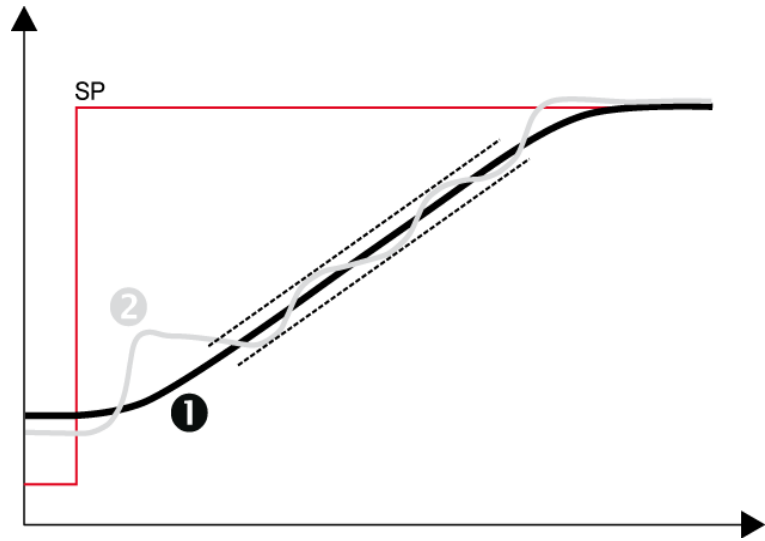
<p>Specifies the minimum setpoint value increase to start the automatic ramp function.</p>	<p>Parameters ↗[SP03]Automatic ramp setpoint value change (page 193)</p>
<p>Specifies the maximum difference between the actual values and reference zone.</p>	<p>Parameters ↗[SP02]Automatic ramp tolerance band (page 193)</p>





**Example**

Temperature trend of two zones with different rate of rise with activated automatic ramp.

After Heating identification of zone 1+2, both zones are heated-up uniformly together depending on the slowest zone (here: zone 1) to the final setpoint value.



## 15.3 Heat'n'Dry

	<p>With Heat'n'Dry <b>hotcontrol cDT+</b> hot runner controllers offer a function for low-stress heating-up of heaters.</p>
<p><b>How it works</b></p>	<p>During the heating-up process the hot runner is heated up with step-by-step heating capacity. During heating-up process the residual current is checked. Exceeds the residual current the limit value set, the heating is done with reduced heating capacity, as long as the residual current is under the limit value again. Heat'n'Dry has higher priority than function start-up operation.</p>
<p><b>What good is it</b></p>	<p>Heat'n'Dry guarantees a longer lifetime of heating elements. It is ensured, that a heating-up to the set setpoint value is only done, when it is 100% guaranteed that there is no moisture in the isolation material of the heating elements. By this, damage can be prevented resulting of short-circuits in the heater.</p>
<p><b>Setting by</b></p>	<p>↗[SP05]Maximum residual current (page 193) ↗[P027]Heat'n'Dry (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hotcontrol cDT+</b>.</p> <p>Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)</p>

When molds are stored for a longer time, the insulating material for the electrical heating elements can draw moisture. This moisture can at rapid heating (without Heat'n'Dry) lead to vapor pressure inside the heater and cause damage. Furthermore this moisture leads to leakage currents on connected protective conductors, that disconnects fault-current circuit breakers and prevents the heating-up.

Heat 'n' Dry executes a gentle heating-up with stepwise increasing of the power supply. The leakage current is permanently checked. The moisture is completely dried by a setpoint value of 110°C.

The heating-up on the final setpoint value starts first, when it is assured, that

- the error current lies below a adjustable limit value
- in the heating elements is no longer moisture.

The function Heat'n'Dry is started, when the start conditions

- Actual value < 90°C (194 °F)
  - Setpoint value > 110°C (230 °F)
  - Heat'n'Dry is enabled by parameter
- are met.

During heating-up of the zones with active Heat'n'Dry function, also the inactive zones for Heat'n'Dry are adjusted to 110°C. After the zones with active Heat'n'Dry are adjusted to 110°C, all zones are adjusted to their preset setpoint values.


While the Heat'n'Dry function is running, no current measuring is executed.


By the parameter (see ↗[SP05]Maximum residual current (page 193)) the maximum admissible value for the leakage current is set.

The function can be activated/deactivated by the parameter (↗[P027]Heat'n'Dry (page 191)).

The function Heat'n'Dry has priority to function see function ↗Start-up mode (page 143).

### 15.4 Auto Tuning (Identification)

<b>Description</b> 	The hot runner controller <b>hotcontrol cDT+</b> offers a procedure, that is named identification.
<b>How it works</b>	The heating control parameters are automatically calculated after a setpoint value jump of 40 K
<b>What good is it</b>	The hot runner controller adapts itself to the factors of the connected control system.
<b>Setting by</b>	↗[P030]Identification (page 191) ↗[P031]Loop control (page 191) ↗[P032]Cutback (page 191)



For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)

By loop control is specified whether the calculated heating control parameters during identification are directly checked with the setpoint value and whether they are to be corrected.

By cutback is specified, whether this identification is made directly for the setpoint value or below the setpoint value.



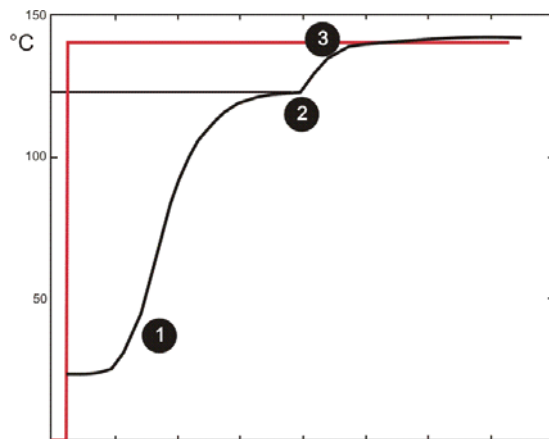
**1** After a setpoint value jump from 0°C to 140°C the Heating control parameters are recalculated during heating-up.

↗[P030]Identification (page 191) = On  
 ↗[P031]Loop control (page 191) = On

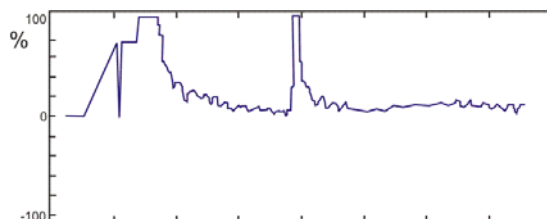
**2** 20°C (setpoint value cutback) before reaching the setpoint value of 140°C the calculation of the heating control parameters is finished.

↗[P032]Cutback (page 191) = 20

**3** Control is executed on the specified setpoint value.





Setpoint value / actual value





Output value




## 15.5 Start-up mode

<b>Description</b> 	<p>The start-up operation is one of the eldest functions in the hot runner controllers. The main reason for the function is the hygroscopic characteristic of the isolation material Magnesium oxide used in the heaters. That means, that this material binds moisture and influences therefore the electric isolation negative. Voltage application may result in damage of the heater.</p>
<b>How it works</b>	<p>That should be avoided by start-up operation. At start-up, the zones are not directly heated up to setpoint value with full heating power, but for a defined start-up time to a setpoint value of 100°C. During this time the moisture is completely dried in the heating element, so that after elapsed start-up time, heating up to the end setpoint value is safe.</p>
<b>What good is it</b>	<p>The start-up operation implies high operating reliability and extension of lifetime of the heating elements, what is reflected in low operating and maintenance costs.</p>
<b>Setting by</b>	<p>↗[P015]Start-up mode (page 191)  ↗[P016]Start-up time (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p> <p>Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)</p>

## 15.6 Leading zone operation

<b>Description</b> 	<p>With a defective sensor, the zone must not inevitably be switched off or immediately be repaired.</p>
<b>How it works</b>	<p>There are two alternative functions for solution of the problem. The first is the manual mode, the second the leading zone operation. It provides the possibility, to get the zone with a defective sensor controlled by a similar zone with intact sensor. For this, the zone with the defective sensor must know the zone number of the leading zone, to get the zone controlled with.</p>
<b>What good is it</b>	<p>The leading zone operation has advantages compared to the manual mode because, unlike the manual mode with which a fixed output value is output constantly, the possibility exists in leading zone operation that, in case of the zone with defective sensor, external influences are further considered and controlled. The function guarantees primarily operating reliability and prevents production downtimes.</p>
<b>Setting by</b>	<p>↗[P019]Automatic leading zone operation (page 191)  ↗[P023]Leading zone (page 191)  ↗[P024]Leading zone correction (page 191)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p> <p>Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)</p>

## 15.7 Auto Standby

<p><b>Description</b></p> 	<p>The hot runner controller offers an Auto Standby function. Herewith the hot runner controller monitors a cyclically recurring signal from the injection molding machine and sets the controller, when the signal fails to appear within an adjustable time, into standby mode. The setpoints are lowered depending on the configuration of the standby function <u>to</u> a standby setpoint or <u>by</u> a standby temperature value.</p> <p>Prerequisite for this function is a digital signal from the injection molding machine, as well as the adaptation of certain configuration parameters in hot runner controller.</p>
<p><b>How it works</b></p>	<p>A digital signal (24VDC) of the injection molding machine must be fed to one of the two available digital inputs. In the injection molding machine, the events must be determined which lead to a change in signal level of the digital output. The hot runner controller evaluates the signal edges. In injection molding machines are usually digital outputs available whose functions are freely configurable. For example, it lends itself to use the cycle start as signal edge for the Auto Standby function and to reset the signal during the injection cycle ("open tool" for example) by another event.</p>
<p><b>What good is it</b></p>	<p>To prevent damage to the plastic in the cavities of the hot runner by high temperatures, for example, when production stops, the hot runner controller offers an Auto Standby function.</p>
<p><b>Setting by</b></p>	<p>↗Digital inputs (page 126)          ↗[SP11]Auto Standby Time (page 193)          ↗[P007]Standby setpoint value (page 191)          ↗[SP09]Standby (page 193)</p>



For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

The function is configured in hot runner controller.

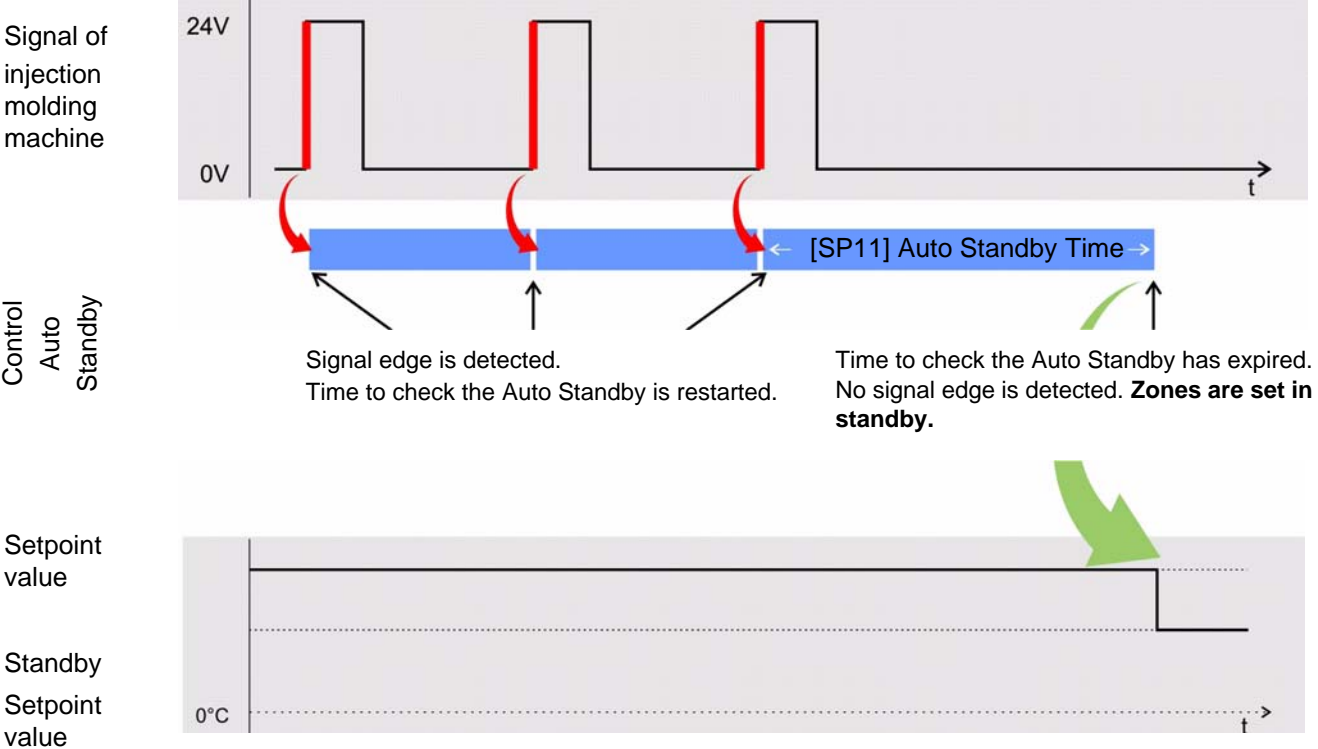
- For a digital input (Input 1...2) is specified whether a positive edge (15-Auto Standby high edge) or a negative edge (16-Auto Standby low edge) is used for triggering of the function.
- By the system parameter ↗[SP11]Auto Standby Time (page 193) is specified, in which time the controller expects a start signal from the injection molding machine.  
Note: This time must be specified in any case longer than the cycle time of the process.
- Control ↗[P007]Standby setpoint value (page 191).  
Note: Factory setting for lowering of temperature is by this value (= relative). Should be lowered to a fixed value, so this has to be changed under the system parameter ↗[SP09]Standby (page 193).

With the above settings, all active control zones are heated by turning on the hot runner controller without examination of cycle signal to the set values. After reaching the setpoint values the Auto Standby function is automatically activated.

After this all zones are controlled to the setpoint value set, when the cycle signal of the injection molding machine fails within the adjusted time.







Should the actual setpoint be controlled again, the standby mode must be reset by the user via the operation and display units. The controller heats the zones without exam of the cycle on the setpoint values and then turns on the Auto Standby function again, when all active zones have reached the setpoint value.

Note: are there zones in the controller used only for temperature monitoring not for temperature control, their setpoint values should preferably be set to 0°C (equivalent to zone passive).








Example for digital input triggered by positive edge

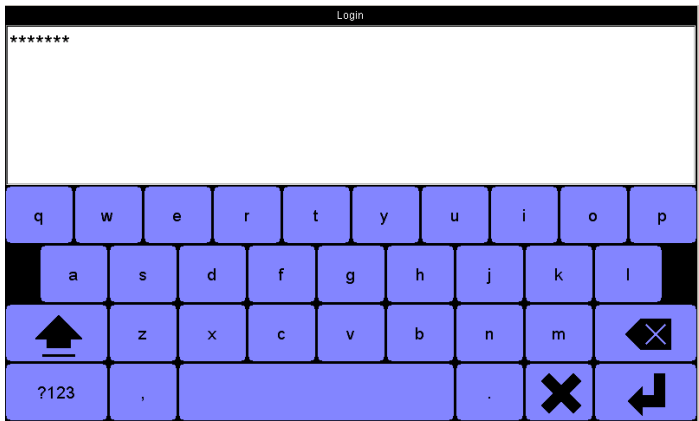
## 15.8 Hot Runner Controller overall functions

<b>Description</b> 	<p>Hot runner controllers can be linked by CAN bus. Some functions (see below) can be triggered and executed controller overall.</p>	
<b>How it works</b>	<p>The hot runner controllers must be connected by CAN bus (see chapter ↗Interface XS2 CAN (page 181)).</p> <p>Each Hot Runner Controller must have its own unique ↗[CP06]CAN NodeID (page 194).</p> <p>The parameter ↗[SP06]Offset zone numbering (page 193) must be set, that no zone numbers are overlapping for the connected Hot Runner Controllers.</p>	
<b>What good is it</b>	<p>Flexible use by combining several devices according to requirements.</p> <p>Hot runner controllers can be combined and be used for tools with a high number of zones.</p> <p>Functional synchronization among each other.</p>	
<b>Setting by</b> 	<p>↗[CP06]CAN NodeID (page 194)</p> <p>↗[SP06]Offset zone numbering (page 193)</p> <p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p>	
<b>Application example</b>  <p>↗Automatic ramp (page 139)</p> <p>↗Start-up mode (page 143)</p> <p>↗Leading zone operation (page 143)</p> <p>↗MoldCheck (page 150)</p> <p>Other functions</p>	<p>2 hot runner controller (H1: 6 Zone, H2:12 Zone) are connected by CAN bus with each other.</p> <p>Set unique NodeID.</p> <p>Setting:</p> <p>[SP06] = 1 (on 1. hot runner controller H1) (Zone 1-6 first hot runner controller H1)</p> <p>[SP06] = 7 (on 2. hot runner controller H2) (Zone 7-18 second hot runner controller H2)</p> <p>The function runs only for zones where the function is activated.</p> <p>The function runs only for zones where the function is activated.</p> <p>In leading zone operation for a defective sensor in zone 2 (on 1. hot runner controller H1) [P023] = 9 can be set, that means zone 9 (zone 3 on 2. hot runner controller H2) works as leading zone.</p> <p>The function considers the zones in the particular device. Zone selection in the particular hot runner controller (Zone 1-6 in H1; Zone 7-18 in H2).</p> <p>All other functions for the zones are directly operated by Control&amp;User Interface CUI07 on each hot runner controller.</p>	
	 <p>At correct connection and correct setting of parameters the symbol (see above) is shown in the header.</p>	 <p>At existing CAN bus connection, but wrong setting of parameters the symbol (see above) is shown in the header.</p>

## 15.9 Reset password

<p><b>Description</b></p> 	<p>In case the password for user prof and/or user admin is unknown, all users can reset ALL passwords to default (see chapter ↗Login/Logout (page 27)).</p>
<p><b>How it works</b></p>	<p>Login with password <b>pwreset</b> in dialog ↗Login/Logout (page 27) and reset ALL passwords to default after confirmation. Thereafter the passwords should soon be changed by the user administration.</p>
<p><b>What good is it</b></p>	<p>In urgent cases, it may be necessary to operate functions, menus and/or parameters, which are not available for the user. Is the person, that knows the password, not present, or the password was forgotten, the operation is in such an emergency possible after appropriate activation.</p>
<p><b>Setting by</b></p>	<p>↗Login/Logout (page 27)</p>
	<p>The standard passwords should thereafter soon be changed by ↗User Administration (page 101).</p>

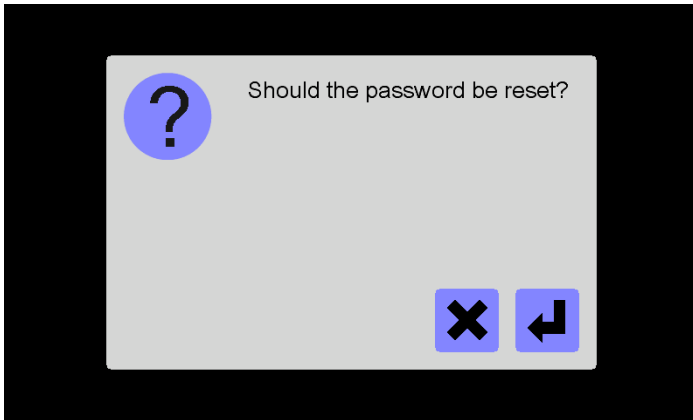
	<p> Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)</p>	<p> Press key</p>
---	---	--



Enter password using the visual keyboard. (Each entered character is prompted as \*)



 Reject

 Confirm





Standard passwords are set after confirmation (see chapter ↗Change password (page 105)).

### 15.10USB support

<p><b>Description</b></p> 	<p>USB flash drives are now common media for data exchange. They are readily available and easily manageable. All hot runner controllers <b>hotcontrol cDT+</b> are equipped with a USB port. A variety of functions is possible in the areas of data backup, service, update and quality assurance.</p>
<p><b>How it works</b></p>	<p>Functions, that save and/or load data on and/or from the USB stick, are enabled for the user, as soon as an USB stick is recognized on the USB port.</p>
<p><b>What good is it</b></p>	<p>For data analysis or for queries of the customer, thus can be used more information. This makes the service easier, faster, more professional. With this feedback the customer may be sent back corrected data, which he can then simply write it into his controller.</p>
<p><b>Via</b></p> 	<ul style="list-style-type: none"> <li>■ ↗Program (page 61)</li> <li>■ ↗MoldSnapshot (page 67)</li> <li>■ ↗MoldCheck (page 150)</li> <li>■ ↗Login/Logout (page 27)</li> <li>■ ↗Generate USB key (page 107)</li> <li>■ ↗Update Firmware CUI07 (page 172)</li> <li>■ ↗Update language-file (page 175)</li> <li>■ ↗Software Download Slave (page 112)</li> </ul>

## 15.11 Relay heating

<b>Description</b> 	<p>In the hot runner controller, a series-connected heating of zones grouped together in so-called relay groups is carried out. The follow-up group is enabled when the setpoint value band of all zones of a predecessor group is reached.</p> <p>The relay heating can be combined with the functions ↗Automatic ramp (page 139), ↗Heat'n'Dry (page 141), ↗Start-up mode (page 143).</p>
<b>How it works</b>	<p>By the zone parameter [P047]&lt;&gt;0 the zones are grouped into a relay group. The ascending relay group number defines the order of heating-up.</p> <p>Setting [P047]=0: Zones heat up directly, independent from function relay heating.</p> <p>Setting [P047]=1: Zones heat up directly after fulfilled start-up conditions and give release to relay group 2 after reaching the setpoint value band.</p> <p>Setting [P047]=2: Zones heat up directly after fulfilled start-up conditions and give release to relay group 3 after reaching the setpoint value band, etc.</p>
<b>What good is it</b>	<p>This is a gentle heating-up for the plastic located in the hot runner. During heating-up plastic is kept on a high temperature level only as long as necessary.</p>
<b>Setting by</b>	<p>↗[P047]Relay heating (page 192)</p>
	<p>For further details on parameters ([P***], [SP**], [CP**]) see Manual Parameters <b>hot-control cDT+</b>.</p> <p>Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)</p>


The function relay heating starts


- after switch-on of the hot runner controller
- after a zone reset (↗[P006]Zone (page 191)ON/OFF)
- after heating switched off

After a setpoint value change the function is no longer effective.

After Standby the function is effective.


## 15.12MoldCheck


<p><b>Description</b></p> 	<p>MoldCheck is a complete diagnosis of electric conditions of the Hot Runner and the corresponding peripherals.</p>
<p><b>How it works</b></p>	<p>The MoldCheck function is triggered by the user. Beside the full wiring control "Is no thermocouple connected to the heating output?" a functional check of heaters and sensors is run.</p> <p>The function is ideal for tool makers and service departments, that have to guarantee their customers and/or colleagues a 100% function of the electrical system of the hot runner, as well as for the molders, who will control the status of the hot runner before installation of the tool on the machine.</p>
<p><b>What good is it</b></p>	<p>Early enough analysis can reduce downtimes before production. Electrical control of the hot runner controller is possible without specialized knowledge. The function provides concrete information for improvement and trouble shooting.</p>
<p><b>Setting by</b></p>	<p>↗[P028]MoldCheck max. wait time (page 191) ↗Login/Logout (page 27)</p>




For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters **hot-control cDT+**.

Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)

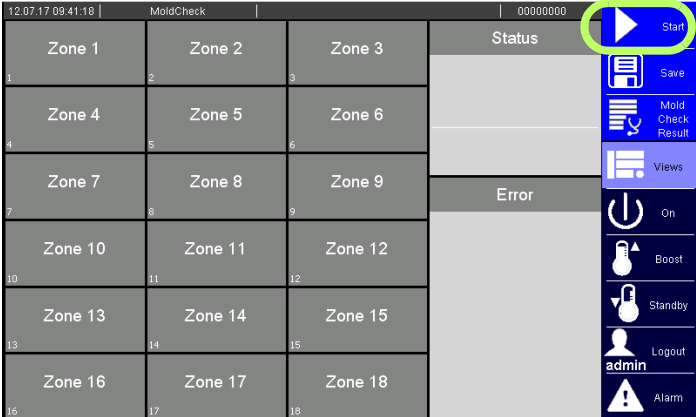





Whether and which keys are activated for the user, see chapter ↗User Administration (page 101)



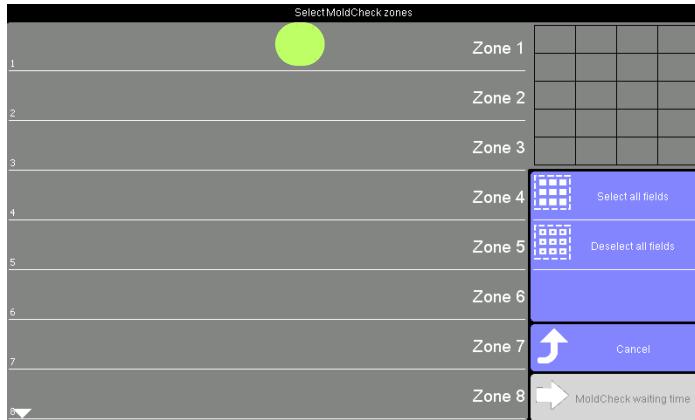
Select function



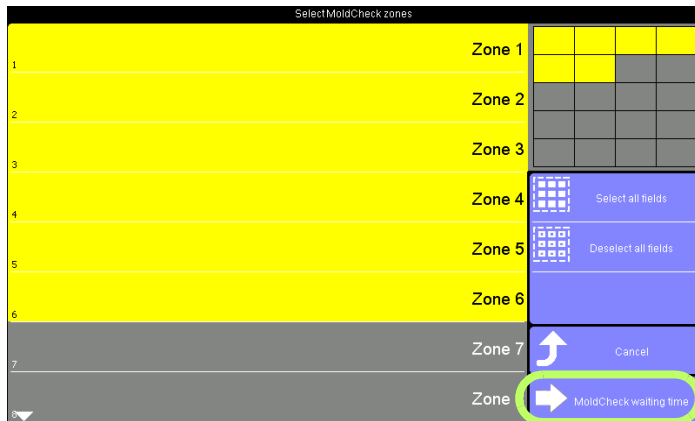


Press key



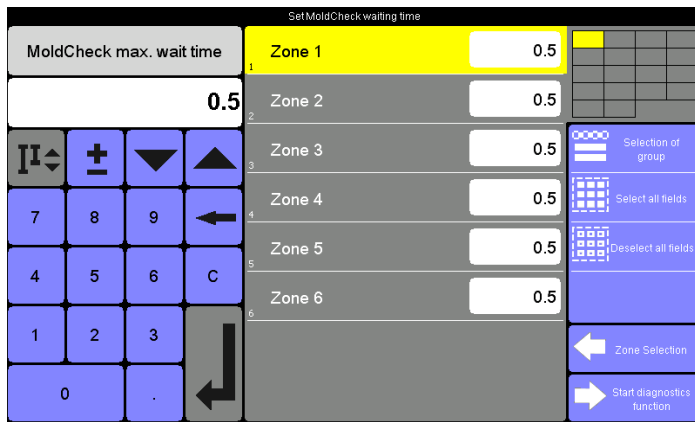


Select zones (here: Zone 1 to Zone 6 selected)



To define MoldCheck waiting time

Press key



Specify MoldCheck waiting time for selected zones.

By the displayed numeric keypad the specification of the new value for the selected zone (here: Zone 1) can be done.



Selection of group (see chapter ↗Edit group (page 52))

Instead of selection single zones (see chapter ↗Zone selection keys [D] (page 50))



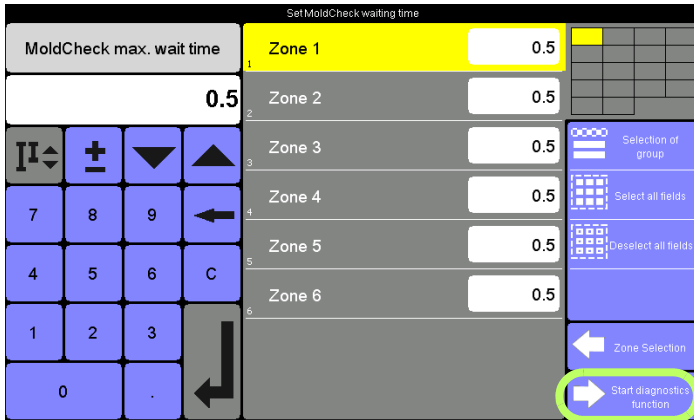
Select all fields



Deselect all fields



For further details on parameters ([P\*\*\*], [SP\*\*], [CP\*\*]) see Manual Parameters hotcontrol cDT+.



To start diagnostics function

Press key

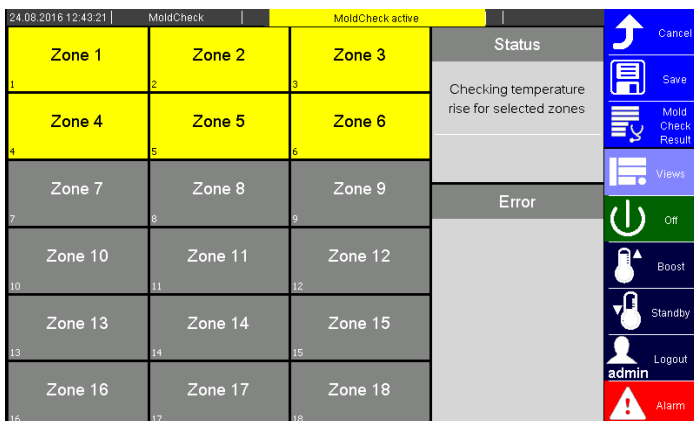
### Recommendation

Setting for very fast nozzles 0.5 minutes

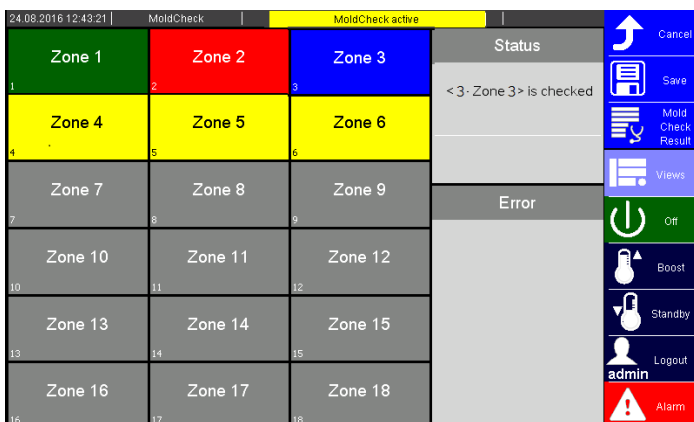
Setting for manifolds 2.0 minutes



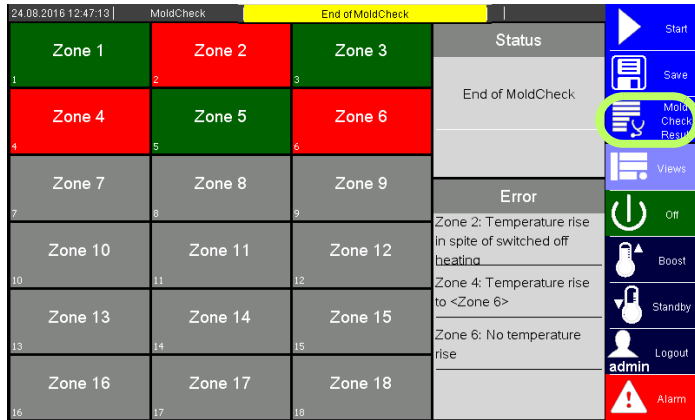
The here specified MoldCheck waiting time is only valid during execution of function MoldCheck. The parameter  $\nearrow$ [P028]MoldCheck max. wait time (page 191) is not changed. The next function call works with the stored value in the parameter again. Should the parameter permanently be changed, the parameter  $\nearrow$ [P028]MoldCheck max. wait time (page 191) must be adapted (see chapter  $\nearrow$ Parameter list [A] (page 47)).




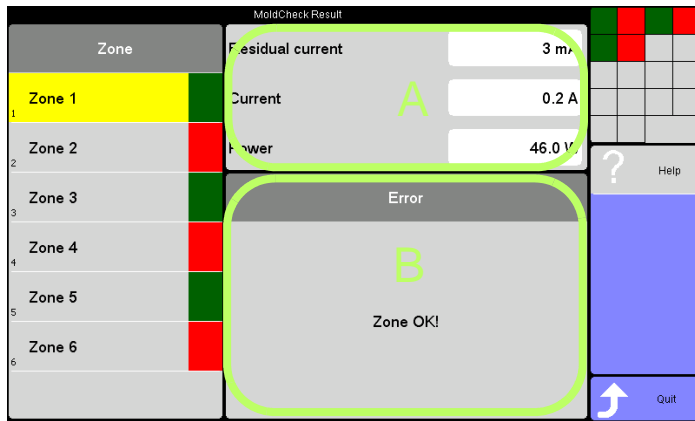
Checking temperature rise for selected zones.



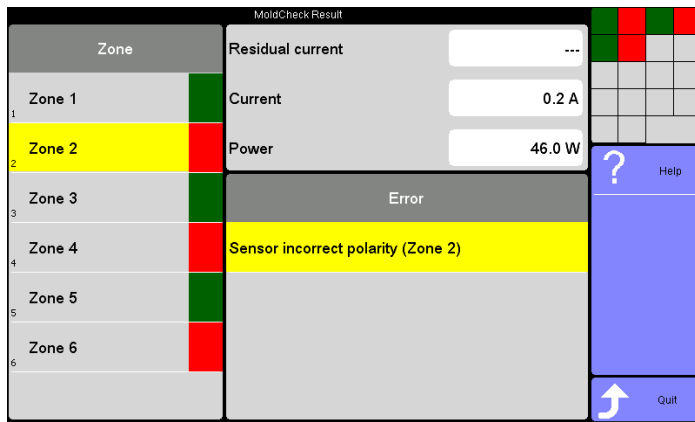
Each selected zone is individually checked (here: Zone 3)



 End of MoldCheck.  
To get a closer look on the result, press key.



MoldCheck result zone 1  
[A] Current values for analysis of zone  
[B] Error, if existing



MoldCheck result zone 2

etc.



Help key without function

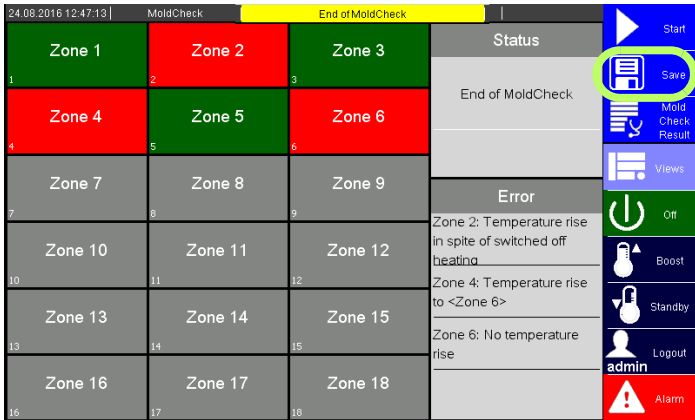
By the shown help key the user could display further notes see chapter 7 MoldCheck Trouble Shooting (page 157),

Zone OK!

The zone has faults



Quit dialog



The MoldCheck result can be stored on the USB stick.

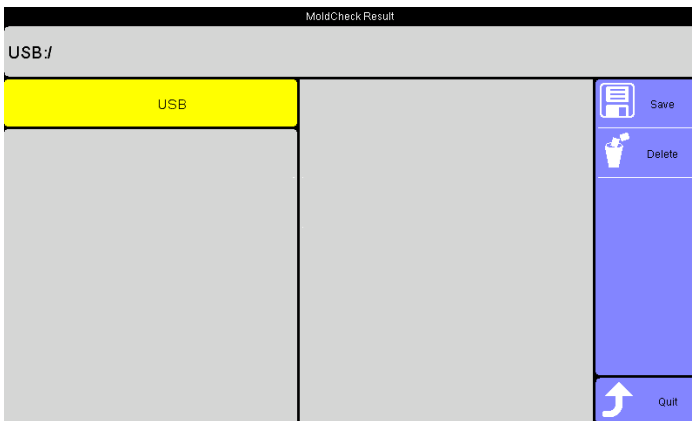
Press key



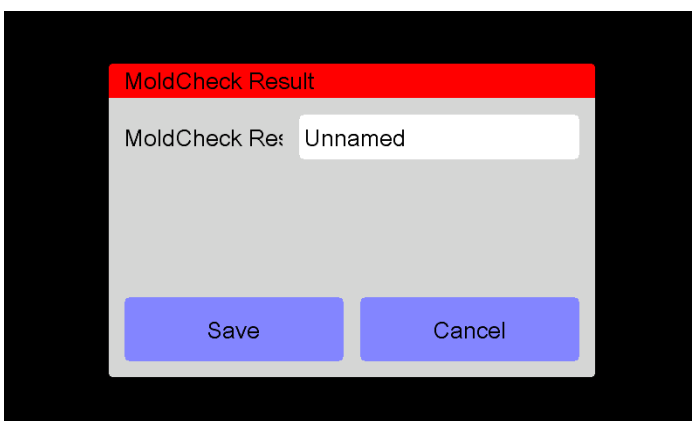
Is no USB stick connected, a message is shown.



The result of MoldCheck of the hot runner controller is only available as long as the function is not exit and/or quit.



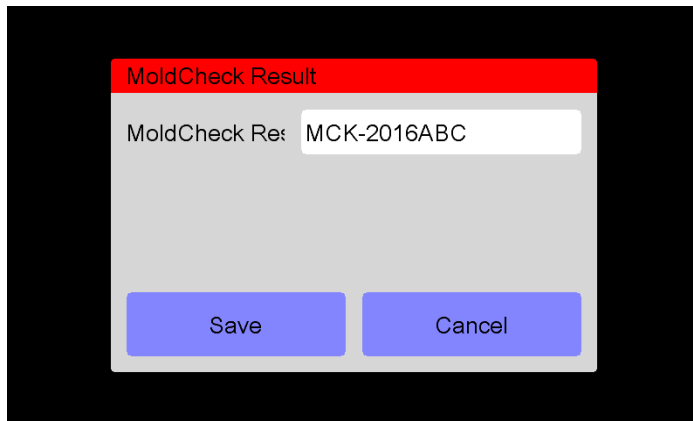
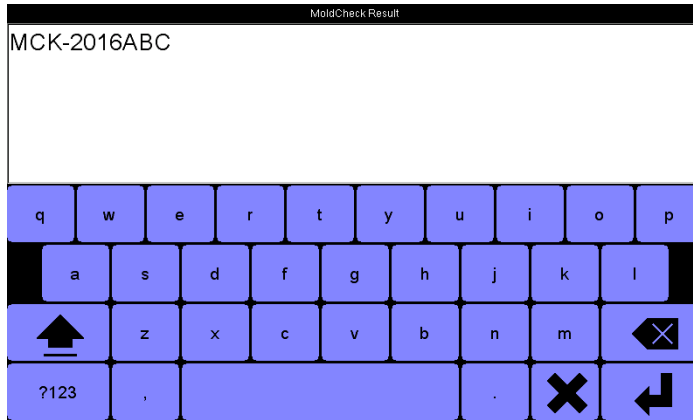
Press key



Confirm on save

Cancel

By selection of the name, it can be changed by the visual keyboard.

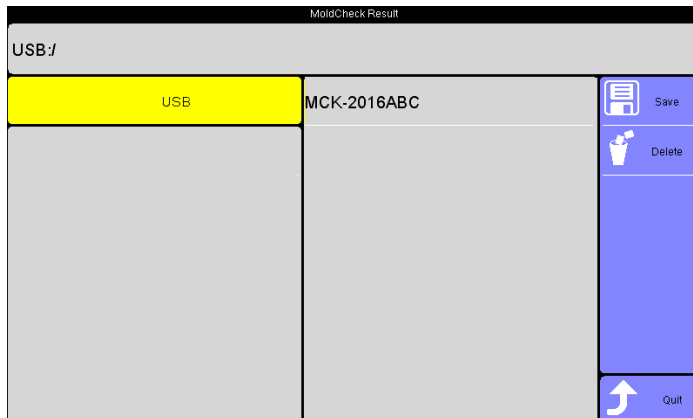


Save  
MoldCheck result is stored with the entered name on USB stick.

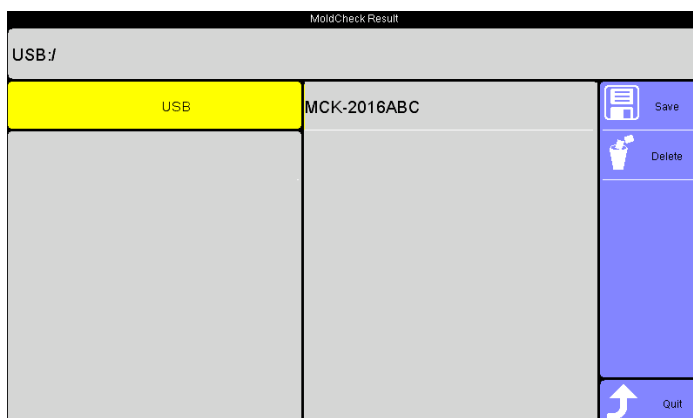
Cancel



If a name is entered, which is already in use, the user can confirm overwriting the file.



MoldCheck result is stored with the entered name on USB stick.



The shown file in the view can be deleted from USB stick



Press key

Select a directory on the USB stick



If available, directory selectable

Return to previous directory



The saved CSV file on USB stick can e.g. imported with Microsoft EXCEL. The file is stored in Unicode (UTF-8) format.



Quit dialog



If the function MoldCheck exited without storing the result before, the user has to confirm, that the data is no longer available in the hot runner controller.



At the end of MoldCheck the heaters are deactivated.

### 15.12.1 MoldCheck Trouble Shooting

After the complete diagnosis of electric conditions of the hot runner and the corresponding peripherals by the function MoldCheck, references for trouble shooting are given for the erroneous zones. The MoldCheck references for trouble shooting are presented as follows:



By the shown help key the user could display further notes for trouble shooting.


Identified faults in header	Possible reason of error	Instructions for trouble shooting
Short circuit	Power of connected heater is higher than connected load of output.	Check wiring of sensor and heating on permutation. Control heater.  1) Remove connecting cable of mold 2) Measure resistance of heating with multimeter 3) Read power value off table in Operating Instructions Hot Runner Controllers and compare it with the connected value of the heating output
Short circuit	Short circuit on power output	Check feed line for short circuit.  1) Remove connecting cable of Hot Runner Controller 2) Measure resistance at terminal with multimeter 3) For resistance equals 0 Ohm fault in cable or feed line of heating in mold 3.1) Remove connecting cable of mold 3.2) Measure resistance with multimeter 3.3) For resistance equals 0 Ohm fault in feed line of heating in mold.
Residual current	Insulation resistance of heater too low, e.g. by humidity in heating element	Single zones - execute MoldCheck again. Where fault continues to exist, exchange heater.
Potential error at sensor input	Measurement signal for sensor input too big.	Check the wiring and the state of the heating element concerning conductive connection between heater and sensor.
Temperature rise in spite of switched off heating	Power output defective	Check actuator card

Identified faults in header	Possible reason of error	Instructions for trouble shooting
No temperature rise	No sensor connected, sensor defective	<p>Check the connected sensors:</p> <ol style="list-style-type: none"> <li>1) Remove connecting cable of Hot Runner Controller</li> <li>2) Measure resistance of sensor with multimeter</li> <li>3) Infinite resistance means, no sensor existing or sensor defective</li> </ol>
No temperature rise	Sensor wrong connected	Check the pin assignment of connecting cable and of mold.
No temperature rise	Neutral conductor permuted	Check wiring system
Mains phase missing	The mains phase to control the power output is not connected (case Yes) or the appropriate fuse was triggered (case No).	<p>Open Hot Runner Controller. Flashes the red LED on all power controller cards?</p> <ol style="list-style-type: none"> <li>1) YES <ol style="list-style-type: none"> <li>1.1) Check main fuse and exchange defective fuses</li> <li>1.2) Check power cord</li> </ol> </li> <li>2) No, only on the appropriate power controller card of the zone: <ol style="list-style-type: none"> <li>2.1) Switch-off power supply</li> <li>2.2) Lock card</li> <li>2.3) Red LED still flashing: exchange power controller card</li> </ol> </li> </ol>
Measured current with switched off heating	Power output defective	Exchange power controller card of the appropriate zone.
No current measured	No heater connected	<p>Check the connected heating element</p> <ol style="list-style-type: none"> <li>1) Remove connecting cable of Hot Runner Controller</li> <li>2) Measure resistance of heating with multimeter</li> <li>3) "Infinite" resistance means, no heating element found</li> </ol>
No current measured	Power of the connected heating element too low	In case of power value of heating zone below 50 W (at 230V) no current measurable.
No current measured	Fuse defective	Check appropriate fuse for zone on power controller card and where necessary, exchange it.
No current measured	Wiring error	Check wiring



Identified faults in header	Possible reason of error	Instructions for trouble shooting
Sensor reversed polarity	Sensor with reversed polarity connected.	Check the pin assignment of connecting cable and of mold.
Sensor defective or no sensor connected	No sensor connected, sensor defective	Check the connected sensors  1) Remove connecting cable of Hot Runner Controller 2) Measure resistance of sensor with multimeter 3) Infinite resistance means, no sensor existing or sensor defective
Sensor defective or no sensor connected	Sensor wrong connected	Check the pin assignment of connecting cable and of mold.
Sensor permuted	The sensor or the heating of the zone was connected to the connection of zone XXX	Check other zones for occurrence of same fault and remove wiring faults in connecting cable and mold.
Check not completely executed!	Check not completely executed!	Repeat MoldCheck for these zones

### 15.13 Process Monitoring

<p><b>Description</b></p> 	<p>Unfortunately leakages in hot runner and hence resulting overmolding could not always be avoided. They could be caused by wear, incorrect operation, construction or production faults or by incorrect installation, leading at last to production breakdown and expensive repair.</p> <p>The function leakage detection in the hot runner controllers can identify an upcoming leakage at an early stage, quickly and reliably by intelligent analysis of the process parameters.</p> <p>It is possible that there will be false alarms and leaks can not be detected. This usually depends on structural conditions in the hot runner, as well as on a faulty operation.</p>
<p><b>How it works</b></p>	<p>The status of the zones in the hot runner is supervised by process monitoring with the help of characteristics, determined during the learning phase (operating point, tolerance band).</p> <p>Is the function process monitoring running in case of an error, i.e. the tolerance limit is exceeded, an alarm is output on display. This alarm can be output on an output and be used for further analysis e.g. as „Stop Machine“.</p>
<p><b>What good is it</b></p>	<p>The process monitoring is an important module for operating reliability. With it, the state of the hot runner is monitored for leaks. If properly applied, unnecessary downtime, due to cleaning of the hot runner of over injected plastic, is prevented.</p>
<p><b>Setting by</b></p>	<p>↗[SP07]Process monitoring mode (page 193)          ↗[P025]Proc.monitor. tolerance (page 191)          ↗[P026]Proc.monitor. operating point (page 191)</p>
	<p>Text in zone display see chapter ↗Messages - Alarms, Status, Functions (page 73)</p>

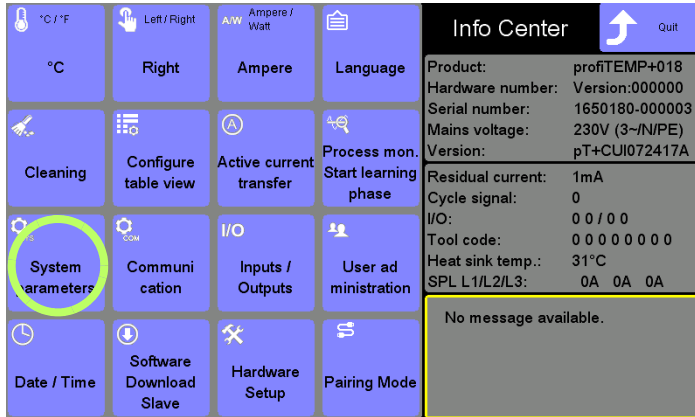
Recommendation

The learning phase should start, when the machine is running, i.e. after production start of the injection molding machine. Please note this, when process monitoring mode is selected. Is the learning phase started at a different point of time, the learned operating points can be adapted by greater tolerance definitions.



**i** Whether and which keys are enabled for the user, see chapter ↗User Administration (page 101)

Display Infocenter by ↗Wipe down (page 15) in the header

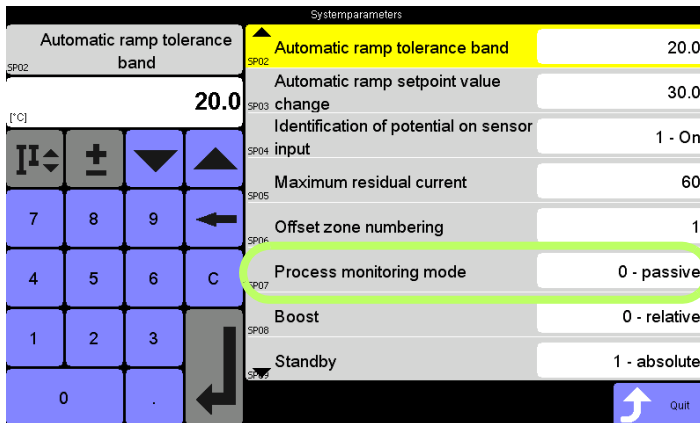


Press key

First check the setting of the system parameters ↗[SP07]Process monitoring mode (page 193) and change if applicable.



On touch the key appears selected.

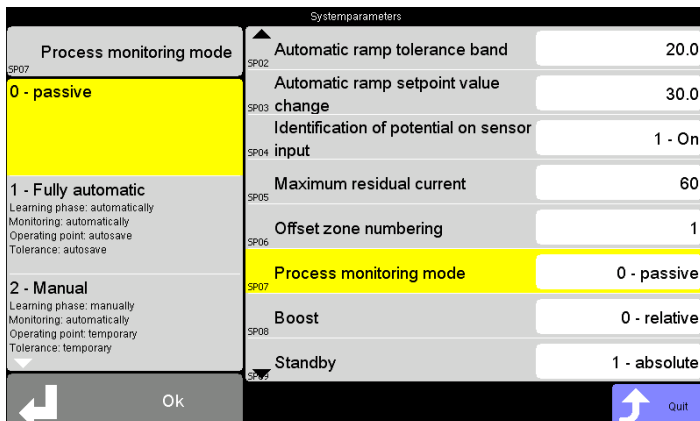


Select parameter

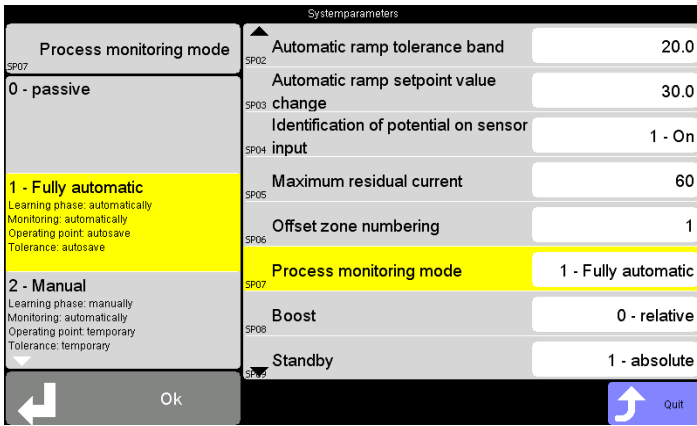
As default the function process monitoring is switched off = passive. The following modes are available:



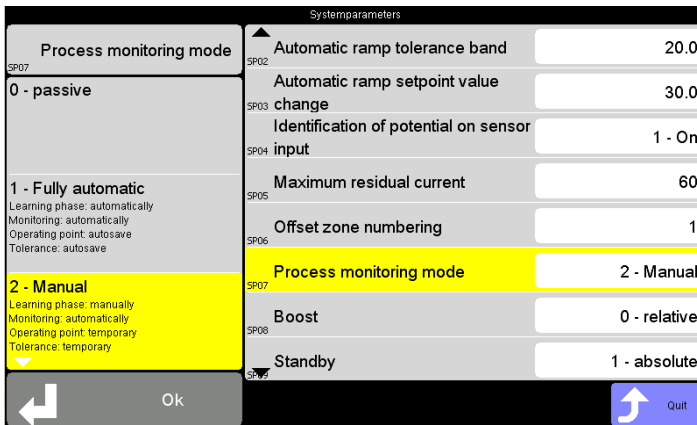
- passive
- Fully automatic
- Manual
- Intelligent



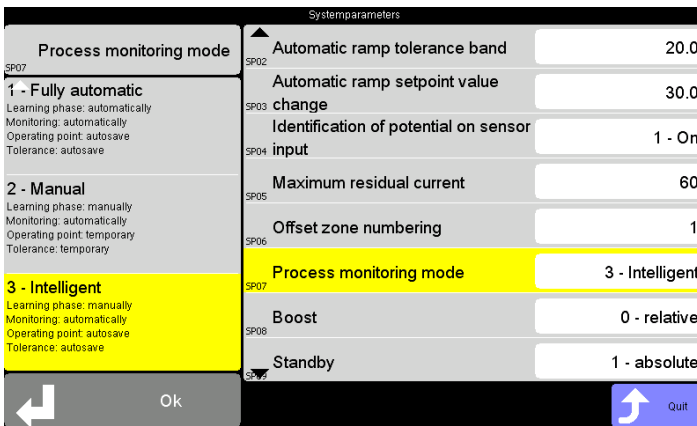
Process Monitoring deactivated



See Chapter 7 Process Monitoring Mode: Fully automatic (page 166)



See Chapter 7 Process Monitoring Mode: Manual (page 168)



See Chapter 7 Process Monitoring Mode: Intelligent (page 163)




Quit dialog



### 15.13.1 Process Monitoring Mode: Intelligent

#### Process Monitoring Mode Intelligent

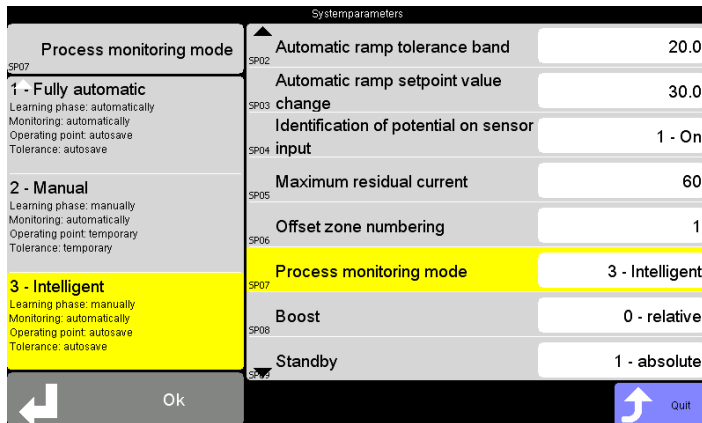
Start learning phase executed	Manual (by user)
Monitoring executed	Automatic
Operating point	Auto save in parameter ↗[P026]Proc.monitor. operating point (page 191)
Tolerance	Auto save in parameter ↗[P025]Proc.monitor. tolerance (page 191)



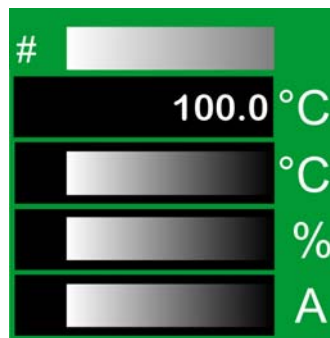
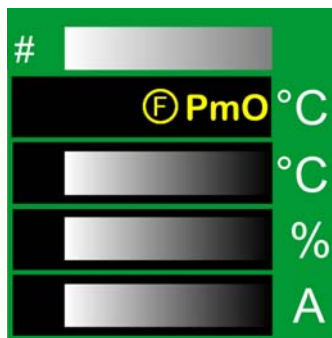
In the illustrated example, the sequence is shown if no learning phase had previously been running.

The header is displayed when the process monitoring is switched on.  
See ↗[SP07]Process monitoring mode (page 193) <> 0



Process Monitoring Mode: **Intelligent** is specified



In the standard view, after switch-on of the heaters of the hot runner controller: In the first line of the zone display, the display **Pmo** - process monitoring is not active (see chapter ↗Messages - Alarms, Status, Functions (page 73)) alternates with the display of the current value (here: 100 °C).

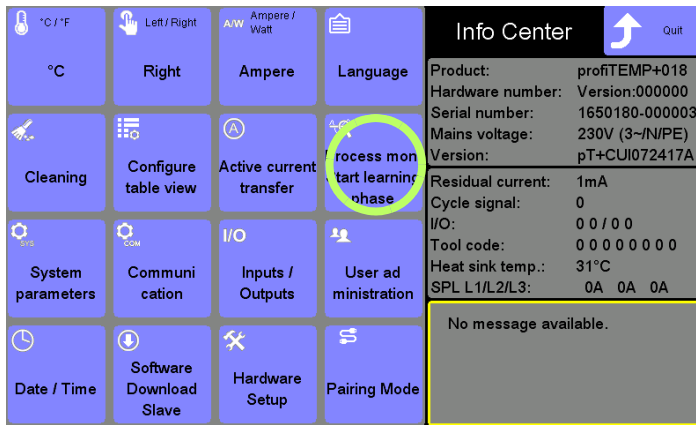


Start learning phase manually.



There is at least one message existing.

Display Infocenter by  $\nearrow$ Wipe down (page 15) in the header over screen edge



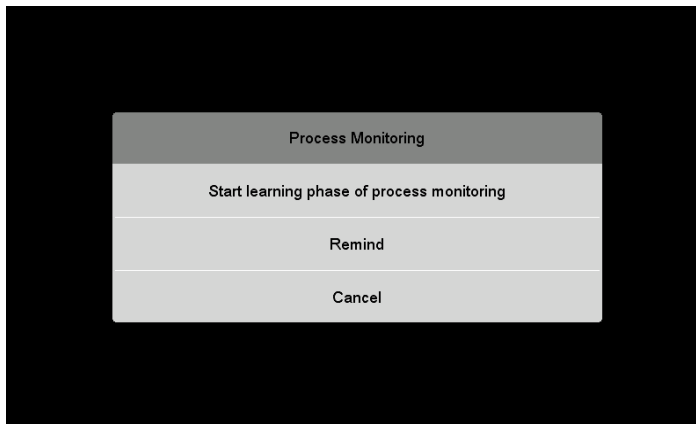
Start learning phase (see  $\nearrow$ P-process monitoring learning phase Mode 1 (page 165))



Press key

On touch the key appears selected.

OR



Switching on the heaters of the hot-runner controller and process monitoring mode: Intelligent, the adjacent dialog box is displayed.

Start learning phase

Start learning phase (see  $\nearrow$ P-process monitoring learning phase Mode 1 (page 165))

Remind

After 5 minutes, the dialog is again displayed to remind

Cancel

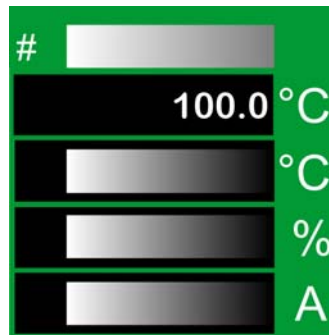
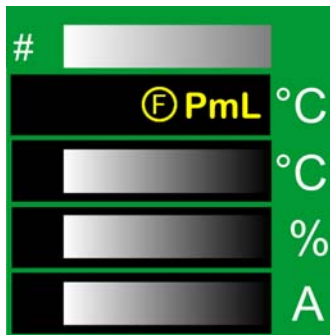
Cancel dialog.

(the dialog will be shown again when the heaters are switched off and on again)



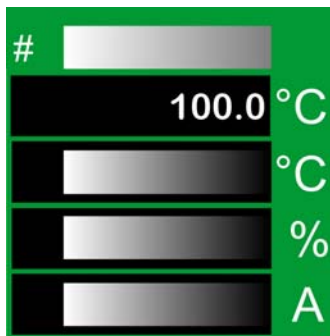
If the parameter  $\nearrow$ [P026]Proc.monitor. operating point (page 191)  $\langle \rangle$  0 for at least one zone, the monitoring can be activated directly.

## Process monitoring learning phase Mode 1



In the standard view:

In the first line of the zone display, the display **PmL** - process monitoring learning phase (see chapter ↗Messages - Alarms, Status, Functions (page 73)) alternates with the display of the current value (here: 100°C).



Wait for end of function.

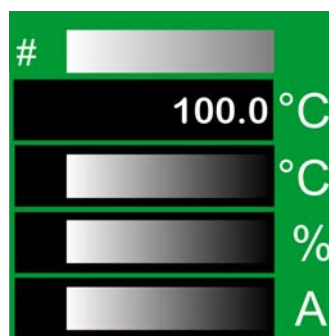
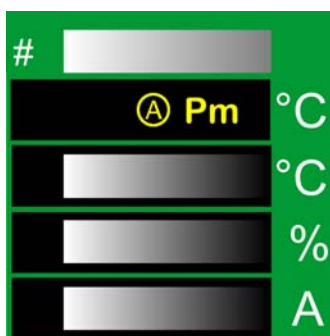
In the standard view:

In the first line of the zone display, the display of the current value (here: 100 °C) is shown.



The monitoring starts automatically following the learning phase.

The process monitoring is active and supervises the status of the zones in the hot runner.



In the first line of the zone display, the display **Pm** - process alarm (see chapter ↗Messages - Alarms, Status, Functions (page 73)) alternates with the display of the current value (here: 100 °C), when the tolerance limit is exceeded at activated monitoring. The alarm can be output on an output and be used for further processing e.g. as „Stop Machine“. The alarm message (see chapter ↗Messages - Alarms, Status, Functions (page 73)) can be acknowledged, as soon as the control characteristic returns to normal (error fixed), otherwise the alarm is activated immediately again.

### 15.13.2 Process Monitoring Mode: Fully automatic

#### Process Monitoring Mode **Fully automatic**

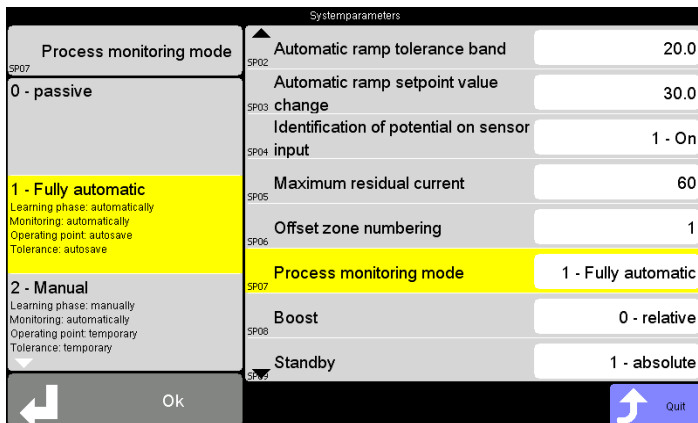
Start learning phase executed	Automatic
Monitoring executed	Automatic
Operating point	Auto save in parameter ↗[P026]Proc.monitor. operating point (page 191)
Tolerance	Auto save in parameter ↗[P025]Proc.monitor. tolerance (page 191)



In the illustrated example, the sequence is shown if no learning phase had previously been running.



The header is displayed when the process monitoring is switched on. See ↗[SP07]Process monitoring mode (page 193) <> 0

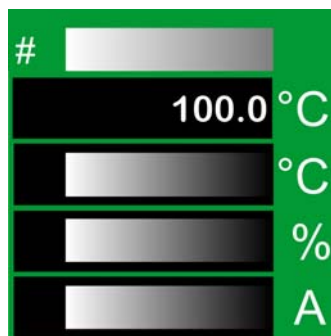
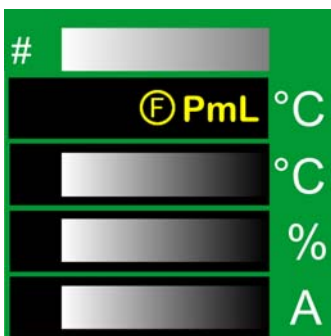


Process Monitoring Mode: **Fully automatic** is specified



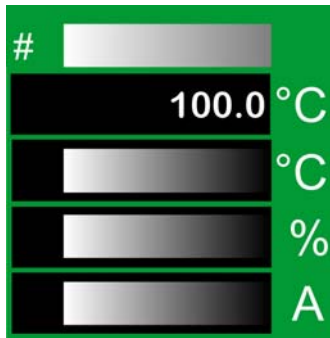
Learning phase starts automatically.

#### Process monitoring learning phase



In the standard view, after switch-on of the heaters of the hot runner controller: In the first line of the zone display, the display **PmL** - process monitoring learning phase active (see chapter ↗Messages - Alarms, Status, Functions (page 73) alternates with the display of the current value (here: 100 °C).





Wait for end of function.

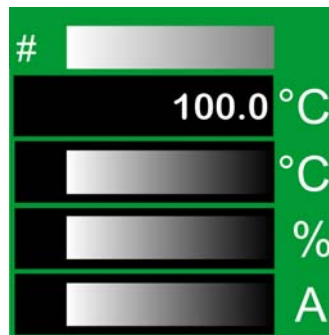
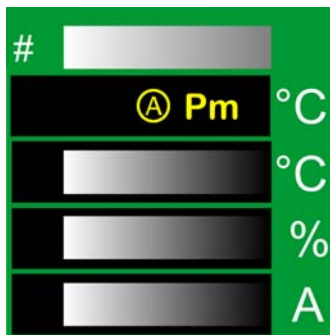
In the standard view:

In the first line of the zone display, the display of the current value (here: 100 °C) is shown.



Monitoring starts automatically following the learning phase.

The process monitoring is active and supervises the status of the zones in the hot runner.




In the first line of the zone display, the display **Pm** - process alarm (see chapter ↗Messages - Alarms, Status, Functions (page 73)) alternates with the display of the current value (here: 100 °C), when the tolerance limit is exceeded at activated monitoring. The alarm can be output on an output and be used for further processing e.g. as „Stop Machine“. The alarm message (see chapter ↗Messages - Alarms, Status, Functions (page 73)) can be acknowledged, as soon as the control characteristic returns to normal (error fixed), otherwise the alarm is activated immediately again.



### 15.13.3 Process Monitoring Mode: Manual

#### Process Monitoring Mode: **Manual**

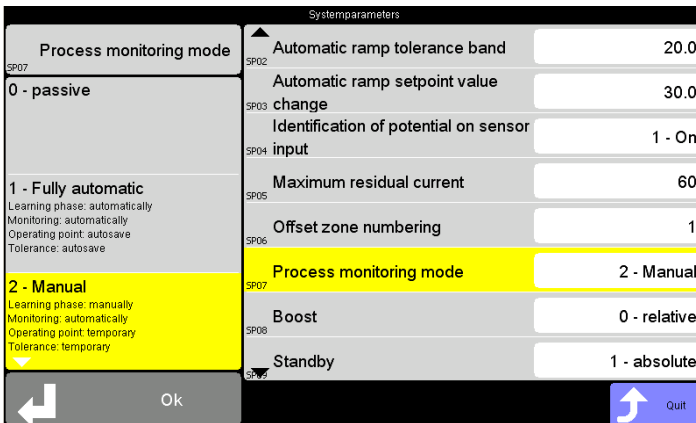
Start learning phase executed	Manual (by user)
Monitoring executed	Automatic
Operating point	Temporary determination of operating point; display in view table possible (Parameter ↗[P026]Proc.monitor. operating point (page 191) remains unchanged)
Tolerance	Temporary determination of tolerance; not displayed (Parameter ↗[P025]Proc.monitor. tolerance (page 191) remains unchanged)



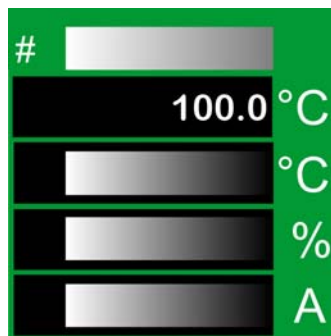
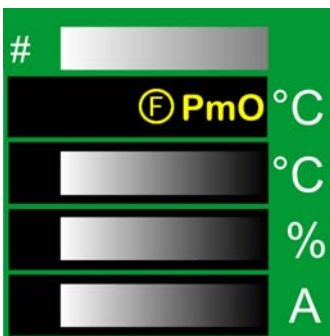
In the illustrated example, the sequence is shown if no learning phase had previously been running.


The header is displayed when the process monitoring is switched on. See ↗[SP07]Process monitoring mode (page 193) <> 0



Process Monitoring Mode: **Manual** is specified



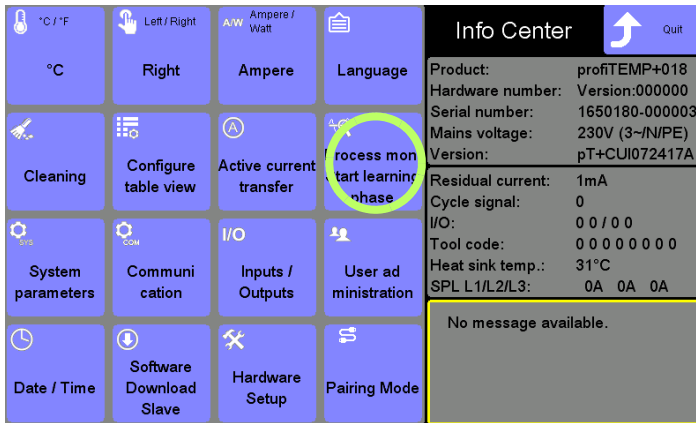
In the standard view, after switch-on of the heaters of the hot runner controller: In the first line of the zone display, the display **Pmo** - process monitoring is not active (see chapter ↗Messages - Alarms, Status, Functions (page 73)) alternates with the display of the current value (here: 100 °C).

 Start learning phase manually.



There is at least one message existing.

Display Infocenter by  $\nearrow$ Wipe down (page 15) in the header over screen edge



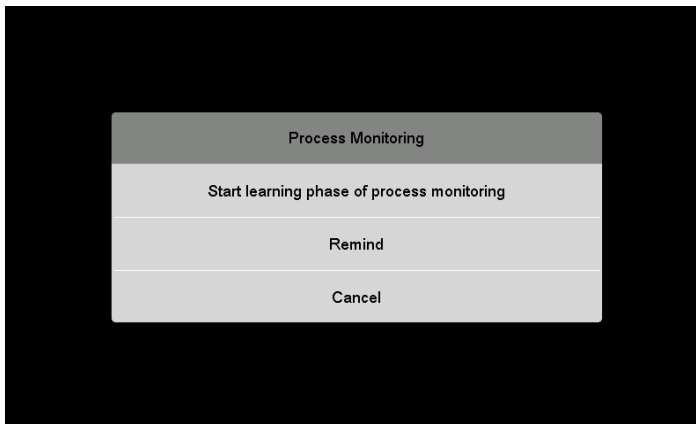
Start learning phase (see  $\nearrow$ P-process monitoring learning phase Mode 1 (page 165))



Press key

On touch the key appears selected.

OR



Switching on the heaters of the hot-runner controller and process monitoring mode: Intelligent, the adjacent dialog box is displayed.

Start learning phase


Start learning phase (see  $\nearrow$ P-process monitoring learning phase Mode 1 (page 165))

Remind

After 5 minutes, the dialog is again displayed to remind

Cancel

Cancel dialog.  
(the dialog will be shown again when the heaters are switched off and on again)

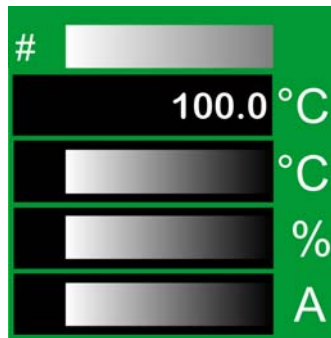
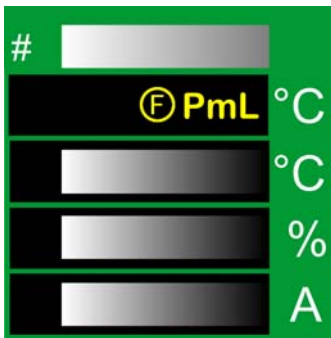
 If the parameter  $\nearrow$ [P026]Proc.monitor. operating point (page 191)  $\neq$  0 for at least one zone, the monitoring can be activated directly.

Zone	Cur. process m on. Oper. point
1 Zone 1	6
2 Zone 2	7
3 Zone 3	10
4 Zone 4	5
5 Zone 5	6
6 Zone 6	8
7 Zone 7	0
8 Zone 8	0
9 Zone 9	0
10 Zone 10	0
11 Zone 11	0
12 Zone 12	0

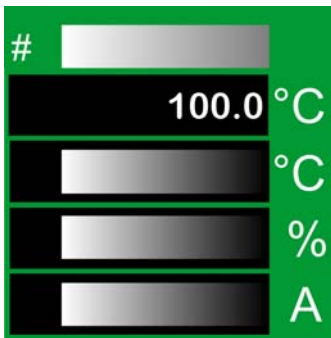
After a corresponding configuration of the table view (see chapter 7 Configure table view (page 109)) the user can view the temporarily determined operating points.

The temporary operating points are deleted when the heater is switched off.

### Process monitoring learning phase Mode 2



In the standard view:  
In the first line of the zone display, the display **PmL** - process monitoring learning phase (see chapter 7 Messages - Alarms, Status, Functions (page 73) alternates with the display of the current value (here: 100°C).

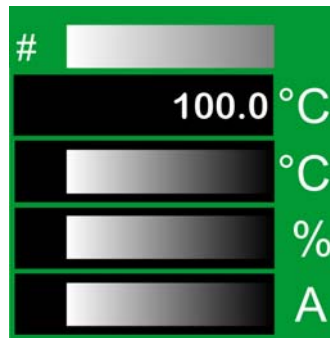
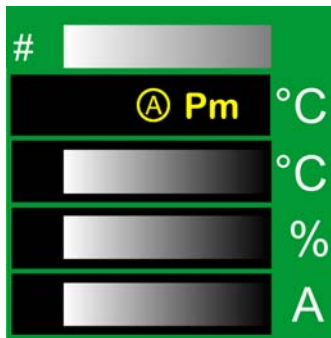


Wait for end of function.  
In the standard view:  
In the first line of the zone display, the display of the current value (here: 100 °C) is shown.



The monitoring starts automatically following the learning phase.

The process monitoring is active and supervises the status of the zones in the hot runner.



In the first line of the zone display, the display **Pm** - process alarm (see chapter [Messages - Alarms, Status, Functions](#) (page 73)) alternates with the display of the current value (here: 100 °C), when the tolerance limit is exceeded at activated monitoring. The alarm can be output on an output and be used for further processing e.g. as „Stop Machine“. The alarm message (see chapter [Messages - Alarms, Status, Functions](#) (page 73)) can be acknowledged, as soon as the control characteristic returns to normal (error fixed), otherwise the alarm is activated immediately again.

### 15.13.4 Process monitoring at a glance

	Mode		Mode		Mode	
	Fully automatic		Manual		Intelligent	
$\nearrow$ [SP07]Process monitoring mode (page 193)						
Learning phase starts	Automatic 1) 2)		Manual 1) 2)		Manual 1)	
Activation learning phase key in Infocenter 4)	yes		yes		yes	
Dialog box to start learning phase	no		yes		yes	
Dialog box to remind	no		yes		yes	
Dialog box to cancel	no		yes		yes	
Display in standard view						
$\nearrow$ [P025]Proc.monitor. tolerance (page 191) 2) 3) 5)	Auto save		no		Auto save	
$\nearrow$ [P026]Proc.monitor. operating point (page 191) 5)	Auto save		no		Auto save	
Temporary determination / display of operating point	no		Table view		no	
Monitoring starts after learning phase	Automatic		Automatic		Automatic	
Start dialog box of process monitoring	no		no		yes	
Display process alarm						

For all modes:

- 1 The learning phase is executed for zones where NO process alarm is persistent.
- 2 The learning phase is executed for zones where parameter  $\nearrow$ [P025]Proc.monitor. tolerance (page 191)  $\leq$  0. (Not in mode: Intelligent)
- 3 By setting of parameter  $\nearrow$ [P025]Proc.monitor. tolerance (page 191) = 0 a zone can be excluded from process monitoring.
- 4 The learning phase can be activated or re-triggered at any time via the embedded button in the Infocenter.
- 5 The parameters of process monitoring could be changed by the user manually. The learning phase should not run at that time.

## 16 Update-Process

Is an USB stick plugged in before start of device and at least one of the following files is located in the root directory

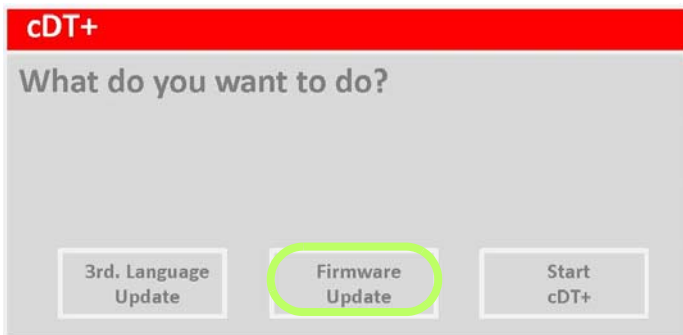
- Control User Interface firmware (HEX-file) cDT+CUI07<version>.hex
- Language-file pT+Lang<language>.pT+

the update-process starts.

### 16.1 Update Firmware CUI07



Do **NOT** remove the USB stick during the whole update-process.



To start firmware update

Firmware Update

Press key



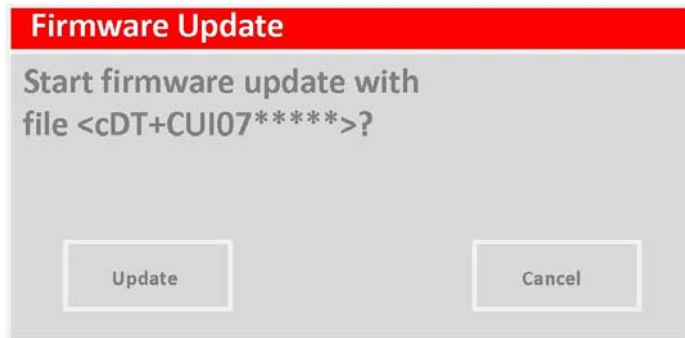
Select HEX-file, when several listed, and start update by

Update

Press key



Hex-file for firmware update cDT+CUI07wwjji.hex  
ww calendar week; jj year; i Index

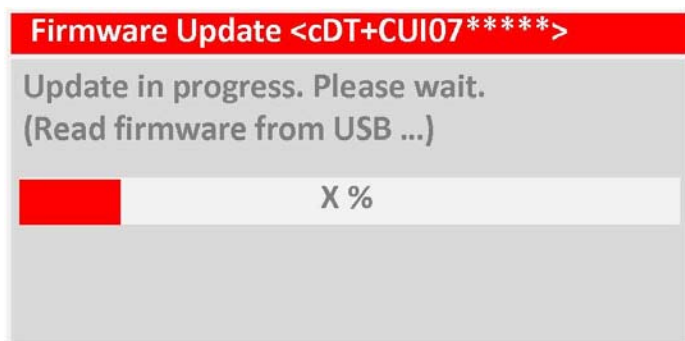


Confirm selection

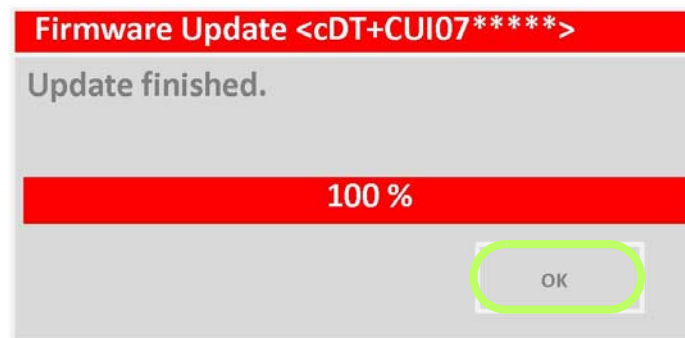
Update

Cancel

Cancel



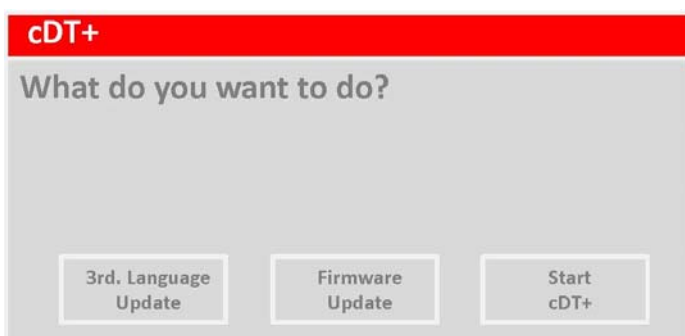
Please wait, until all steps are executed.



Quit dialog by

OK

Press key

Quit menu and start **hotcontrol cDT+** byStart  
cDT+

Press key

Or load language-file (see chapter ↗Update language-file (page 175))

3rd. Language  
Update



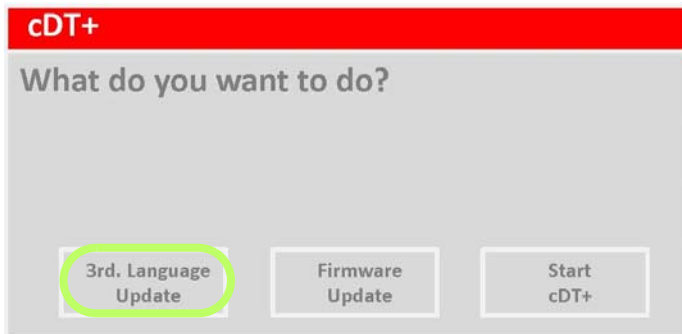
Further process see chapter ↗hotcontrol cDT+ starts (page 12).



## 16.2 Update language-file



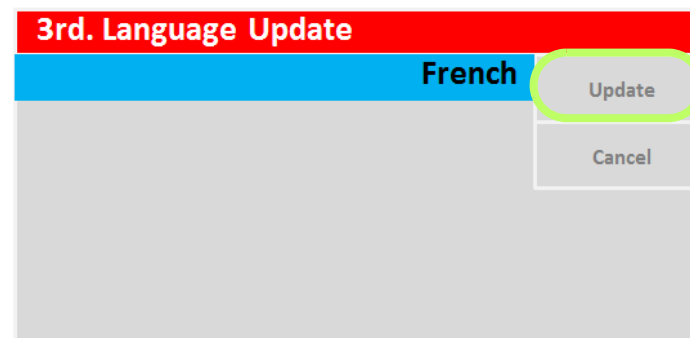
Do **NOT** remove the USB stick during the whole update-process.



To start language-file update

3rd. Language Update

Press key



Select language-file (here: French), when several listed, and start update by

Update

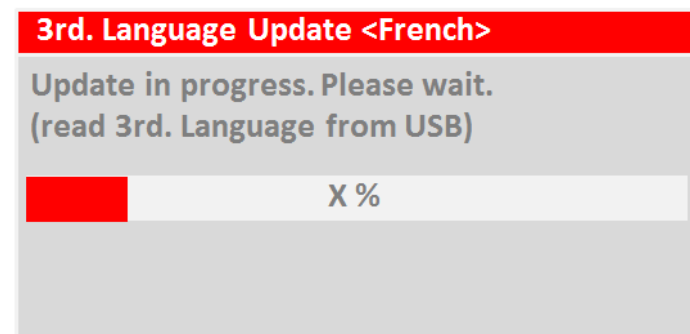
Press key

Cancel

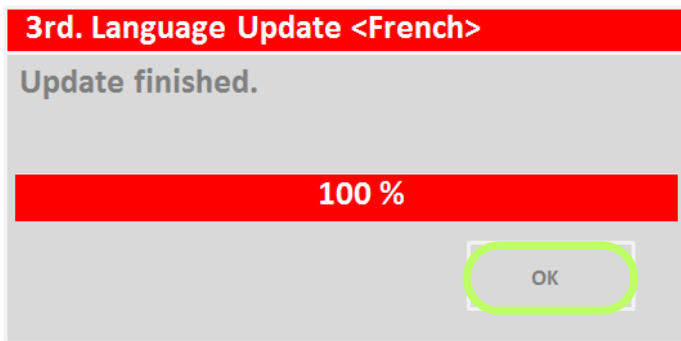
Cancel



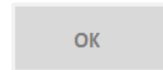
Language-file for update pT+Lang<language>.pT+  
Available languages please see homepage [www.hotset.com](http://www.hotset.com).



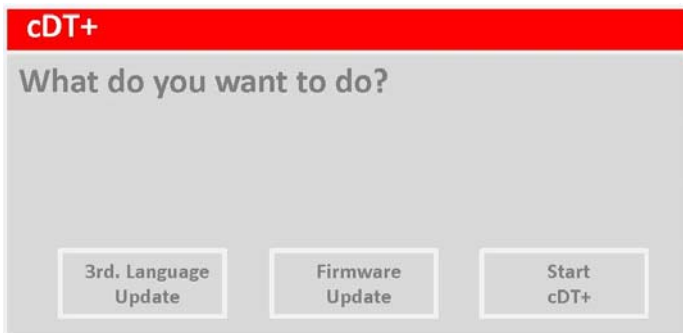
Wait



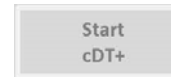
Quit dialog by



Press key

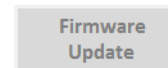


Quit menu and start **hotcontrol cDT+** by



Press key

Or see chapter ↗Update Firmware CUI07 (page 172)



Further process see chapter ↗hotcontrol cDT+ starts (page 12).

## 17 Technical Data

Following the technical data for the used components in the hot runner controller **hotcontrol cDT+** are listed.

- Hot Runner Controller **hotcontrol cDT+**
- CUI07 Control&User Interface 07 (succeeding called CUI07)
- HTC 06/15 Heating Thermocouple Card (succeeding called HTC-card)

The concept of **hotcontrol cDT+** provides 2 desktop housings. The desktop housings are equal in height and depth.



**hotcontrol cDT+ for 06 | 12 | 18 | 24 Zones**

You can find the latest technical data on all products at any time on the homepage [www.hotset.com](http://www.hotset.com).

Device specific data on type, article number, serial number, voltage and power are on the type plate on the particular **hotcontrol cDT+**.

## 17.1 hotcontrol cDT+

Technical data	hotcontrol cDT+ 06	hotcontrol cDT+ 12	hotcontrol cDT+ 18	hotcontrol cDT+ 24
Number of regions	6	12	18	24
Nominal voltage	400 V AC, 3P/N/PE, 50 ... 60 Hz			
Power supply, 3 m	CEE 16 A	CEE 32 A	CEE 63 A	CEE 63 A
Max. power output	11 kW	22 kW	43 kW	43 kW
Display/operation	Via a front-installed controller & user interface with 7" TFT display and capacitive touch (CUI07)			
Dimensions (H x W x D) [mm]	400x260x390	400x260x390	400x260x390	400x260x390
Weight [kg]	21	22	23	24
Permissible temperature	Operation: 0 ... 45 °C, transport, storage: -20 ... 70 °C			
Permissible humidity	Relative humidity <75% as an annual average, no condensation			
Sound pressure level	<50 dB			
Protection type	IP21			
Electrical safety	Protection class I, overvoltage category II			
CE labelling	The device complies with the guidelines for electromagnetic compatibility (complies with EN 61326-1) and the low-voltage directive (complies with EN 61010-1) which underlie the CE-labelling.			
Sensor inputs	hotcontrol cDT+ 06	hotcontrol cDT+ 12	hotcontrol cDT+ 18	hotcontrol cDT+ 24
Number	6	12	18	24
Type	Type J, Fe-CuNi (-35 ... 500 °C), Type L Fe-CuNi (-35 ... 500 °C), Type K, NiCr-Ni (0 ... 900 °C), Pt 100 optional			
Measurement accuracy	< 1 K			
Resolution	0.1 °C / 0.1 °F (°C / °F switchable)			
Power outputs	hotcontrol cDT+ 06	hotcontrol cDT+ 12	hotcontrol cDT+ 18	hotcontrol cDT+ 24
Number	6	12	18	24
Output information	230 V AC, 15 A per area; power loss per area with 15 A max. 20 W; With ambient temperature >=45 °C max. output power 20 kW per heating thermocouple card			
Output signal	Phase angle or pulse group output / zero-crossing switching			
Protection	Protection on card; 2-pole; 6.3 x 32 mm; Only use fuse type SIB FF 16 A Art. 7012540.16			
Simultaneity factor	Simultaneity factor = 100% duty cycle permanent with ambient temperature <= 25 °C; For ambient temperatures > 25 °C, the simultaneity factor may reduce by up to 70% dependent on the average degree of operation and its duration.			
Connections	hotcontrol cDT+ 06	hotcontrol cDT+ 12	hotcontrol cDT+ 18	hotcontrol cDT+ 24
Heating/sensors	24-pole Wieland			
Outputs	Machine approval/alarm message (4-pole HTS on the rear wall) Number: 1 potential-free relay contact 250 V AC/ 1 A			
Inputs	Digital input (9-pole D-SUB socket on the rear wall) Number: 2 0 ... 30 VDC, low level 0 ... 1 V DC, high level 4 ... 30 V DC, I <sub>max</sub> =12 mA at 30 V DC			
Interfaces	RS 485 (9-pole S-SUB socket on the rear wall) number: 1 CAN (9-pole S-SUB socket on the rear wall) number: 1 Ethernet (RJ 45 socket on the rear wall) number: 1			

## 18 System Configuration

All **hotcontrol cDT+** devices are based on a uniform build- and production concept. All components are identical. You can swap freely during maintenance.

### 18.1 Rear side Hot Runner Controller - Connections

Behind the rear side of hot runner controller **hotcontrol cDT+** are connections for

- ↗Power Supply, Main switch
- ↗Sensor inputs and power outputs (Output plug XA\*)
- ↗Control fuse
- ↗Alarm Output XM1 Signal Plug
- ↗Digital inputs XM3 DIO
- ↗Interface XS1 RS485
- ↗Interface XS2 CAN
- ↗Interface XS3 RJ45
- ↗Interface XS5 20 mA (Option)
- ↗Interface XS7 external operation (Option)

The parts of the **desktop housing** are identified by: **Specification** | **Label**

**Plug XA\***  
Assignment see specification / wiring diagram  
**Main switch (main switch)**

**Alarm output XM1 Alarm**

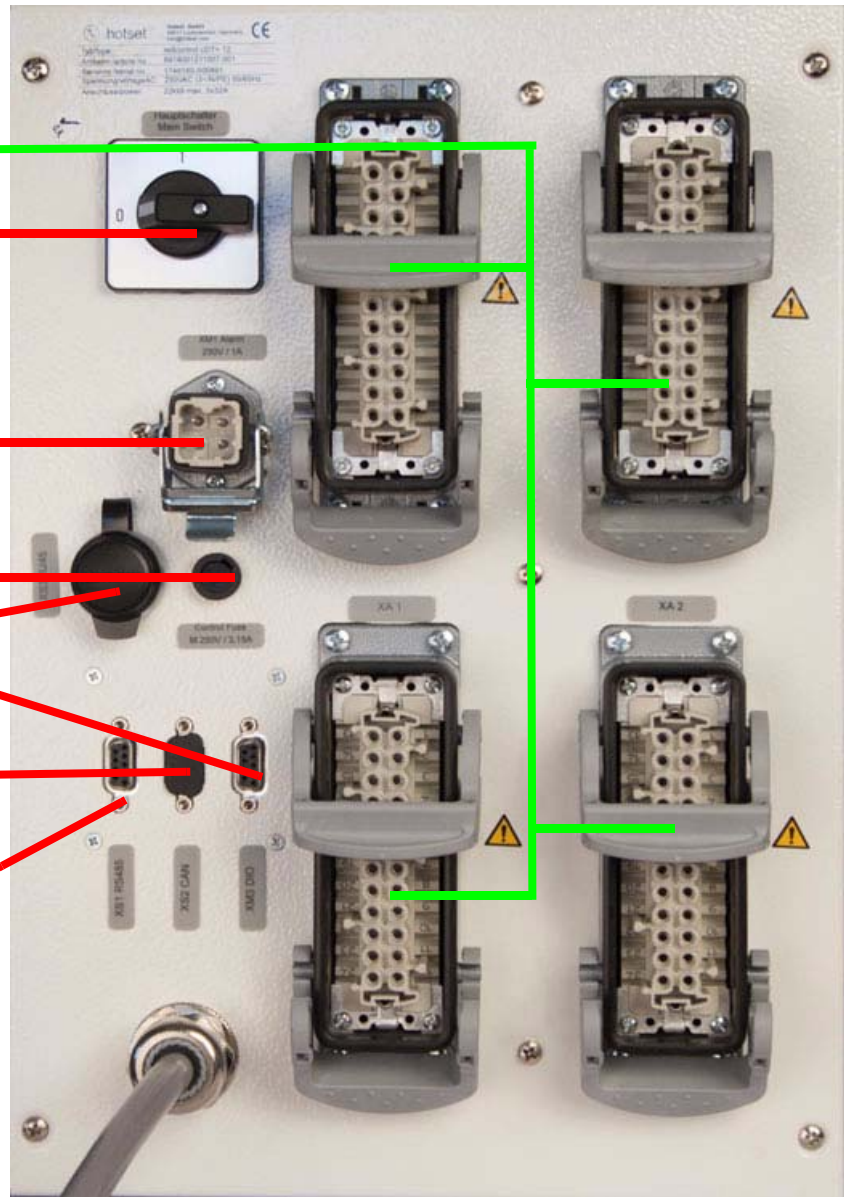
**Control fuse (control fuse)**

**Interface XS3 RJ45**

**Dig. In-/Outputs XM3 DIO**

**Interface XS2 CAN**

**Interface XS1 RS485**

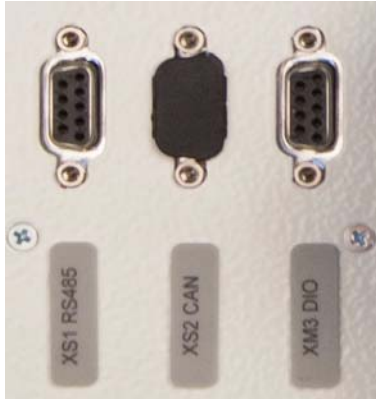


Exemplary figure rear wall hotcontrol cDT+24  
Desktop housing for up to 24 zones without options

**Power Supply feed line**

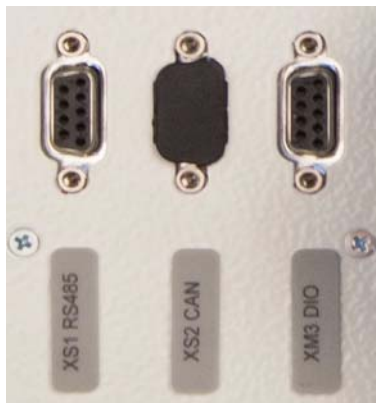
## 18.1.1 Interfaces and Digital inputs

### 18.1.1.1 Interface XS1 RS485



<b>XS1</b>	<b>Serial interface COM</b>	
RS485		
D-SUB, socket		
<b>Pin</b>		<b>Function / signal</b>
1	TX+	RS485
2	TX-	RS485
3	n.a.	
4	n.a.	
5	RX-	RS485
6	RX+	RS485
7	n.a.	
8	n.a.	
9	0V	RS485

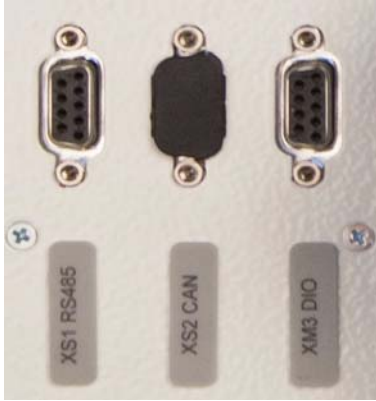
### 18.1.1.2 Interface XS2 CAN



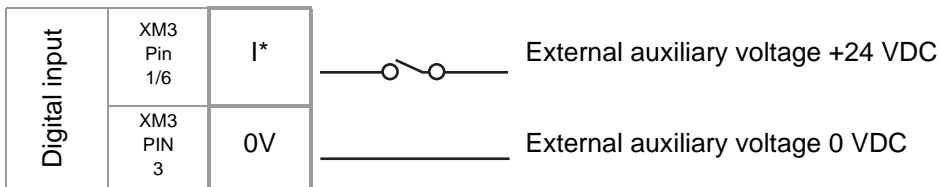
<b>XS2</b>	<b>Interface CANopen</b>	
CAN		
D-SUB, plug		
<b>Pin</b>		<b>Function / signal</b>
1	n.a.	
2	CAN-L	CAN
3	CAN-L	CAN (at Master / Slave)
4	n.a.	
5	n.a.	
6	n.a.	
7	CAN-H	CAN
8	CAN-H	CAN (at Master / Slave)
9	n.a.	

### 18.1.1.3 Digital inputs XM3 DIO

Digital input (24 VDC)



<b>XM3</b>	<b>2 Digital inputs</b>	
DI		
D-SUB, socket		
Pin		Function / signal
1	I1	Digital input 1
2	n.a.	
3	0V	Reference potential I *
4	n.a.	
5	n.a.	
6	I2	Digital input 2
7	n.a.	
8	n.a.	
9	n.a.	



As relay implemented output see chapter 7 Alarm Output XM1 Signal Plug.

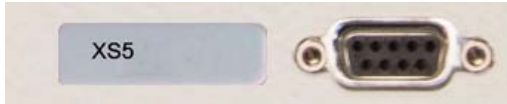
### 18.1.2 Interface XS3 RJ45



<b>XS3</b>	<b>Interface Ethernet</b>
RJ45	
RJ45, Socket	



### 18.1.3 Interface XS5 20 mA (Option)



<b>XS5</b>		<b>Interface 20 mA Option</b>	
20 mA			
D-SUB, socket			
Pin		Function / signal	
1	n.a.		
2	20 mA+	20 mA+	
3	20 mA-	20 mA-	
4	n.a.		
5	n.a.		
6	n.a.		
7	n.a.		
8	n.a.		
9	n.a.		



The 20 mA interface XS5 is only released by manufacturer ., when the device is deployed in markets, where cTUVus certification is not applied .



Only one interface can be operated either ↗Interface XS1 RS485 or ↗Interface XS5 20 mA (Option), if both are established.



The 20 mA interface is established on the rear wall of **hotcontrol cDT+** below XS1, XS2, XM3, when existing.

### 18.1.4 Interface XS7 external operation (Option)



<b>XS7</b>		<b>Interface external operation Option</b>	
Ethernet, CAN, 24VDC			
Hybrid flush-type socket wall bushing; 8 poles			



The interface XS7 for external operation is only released by manufacturer when the device is deployed in markets, where cTUVus certification is not applied.



The interface XS7 for external operation is established on the rear wall of **hotcontrol cDT+** left beside XM1, when existing.

### 18.1.5 Alarm Output XM1 Signal Plug

The alarm output for the signal for enabling of machine/alarm message is implemented as

- potential-free relay contact (output 1 relay)
- Option: potential-free relay contact (output 2 relay) #)













Illustration HTS plug 4-pole

<b>XM1 Signal plug</b>	
HTS plug 4-pole (3-pole & PE)	
Pin	Function / signal
1	
2	
3	n.a.
4	

<b>XM1 Signal plug Option</b>	
HTS plug 5-pole #) (4-pole & PE)	
Pin	Function / signal
1	
2	
3	
4	
5	




#) 5-pole HTS plug for XM1 is only released by manufacturer when the device is deployed in markets, where cTUVus certification is not applied.

Rated output current	1 A
Rated voltage	250 VAC (ohmic load)

### 18.1.6 Control fuse

The control fuse protects the internal 24VDC power supply for the electronics.



In case of replacement of fuses, take care that only fuses are used, that are specified with the same characteristics on the label.  
The safety of the device can otherwise not be guaranteed.

### 18.1.7 Sensor inputs and power outputs (Output plug XA\*)

Connect the thermocouples TC of type J, L, K to the sensor inputs and heaters to the control outputs of the connection of hot runner mold.



Consider terminal assignment (see specifications / wiring diagram).



- The cable cross sections of all connecting cables must be installed, based on valid national standards of the installation location and according to the appropriate type of use in each country. Consider the maximum ambient temperature at selection of cables.
- The connecting cables for power outputs / heaters may only be connected in de-energized status.
- The connecting cables must be designed for an operating voltage of 250VAC and overvoltage category II.



At the plug contacts of the output plugs XA \* can be a dangerous voltage in the on-state.

### 18.1.8 Power Supply



The hot runner controller may be installed and put into operation by specialized staff only. Before switch-on of the control zones it is to be ensured that the hot runner controller is configured for the application. An incorrect configuration can lead to damage to the control section or to injuries to persons.

The hot runner controller is activated/deactivated by the main switch (desktop housing rear wall).



Consider connected load.  
Check the power supply under the terms of the wiring diagram

## 19 Replacement of single components

According to the messages

- on Control&User Interface CUI07
- on PC with installed manufacturer own PC software (project setup and configuration tool **flexotempMANAGER** or operation software **TEMPSoft2**) and/or via bus connection to machine control

the components are replaced, where necessary.

You should first contact the manufacturer/supplier for advice.

**In all other, here not explicitly described cases, send the Hot Runner Controller hotcontrol cDT+ in for repair.**



In all cases where the adjacent symbol is to see on the device, note the safety instructions necessarily on **hotcontrol cDT+**. identified by this symbol/sign/label.

In all cases this Start-up-, Service- and Operation Manual must be consulted.



In case of replacement of single components, for maintenance, note ↗Security References (page 8) necessarily!



Work like e.g. maintenance and repair for **hotcontrol cDT+** may be carried out by authorized and skilled qualified personnel only. Only qualified personnel, skilled and on the risks trained, may use the **hotcontrol cDT+**. The relevant accidental regulations as well as other general approved safety-relevant, occupational-medical norms have to be obeyed.



Before working on **hotcontrol cDT+** always switch-off the mains switch and make sure that **hotcontrol cDT+** is de-energized. Protect the supply voltage against unintentional reclosing.



Single components must be replaced by components of the same type (see type plate). Take care to transfer the same settings (e.g. parameterization).



Before switch-on of the zones it is to be ensured that **hotcontrol cDT+** is configured for the application (see chapter ↗Intended use (page 9)). An incorrect configuration can lead to damage to the control section or to injuries to persons.



The action concerning the handling of ESD devices must be observed!  
Electrostatic sensitive devices!

DIP switch setting (binary coded)

### 19.1 HTC 06/15 Heating Thermocouple Card - Replace fuses

Please pay attention to ↗Security References (page 8)! Identify component.

Please pay attention to ↗Security References (page 8)!

Working on **hotcontrol cDT+** is only allowed in de-energized status of **hotcontrol cDT+**.  
 Working on **hotcontrol cDT+** may be carried out by authorized and skilled qualified personnel only.

Fuse for heating  
Use **ONLY** fuses of type SIBA FF 16A Art.No. 7012540.16!

The action concerning the handling of ESD devices must be observed!  
Electrostatic sensitive devices!



Desktop housing

Deenergize hot runner controller.

Unlock and open front door by double bit lock.



Cards count at **hotcontrol cDT+** desktop housing from **right to left**.

**hotcontrol cDT+**

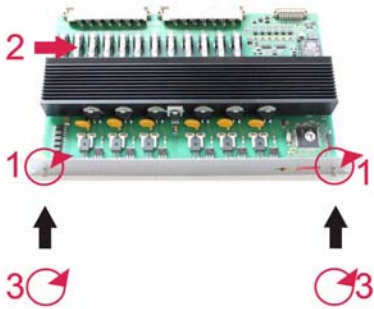
DIP switch setting (binary coded)

DIP  
ON



DEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20...
1	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
2	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
3	White	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
4	White	White	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black
5...	White	White	White	White	White	White	White	White	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White

### Replace fuse on card



(1) Loosen card locking and ensure that the loosened screws do not fall into the device.

Lift the card out of the slot carefully.

(2) Replace fuses (F1.1, F1.2;...; F6.1, F6.2). Look for right fit.

Insert card carefully into the slot into the guide brackets top/bottom and regard the latching of the connectors.

(3) Tighten locking for card.



Close and lock front door by double bit lock.

### Desktop housing

After reconnection of the power supply and the waiting for the start-up time of all components are either

- the manufacturer own operating and display unit or
- the visualization of the machine control

to check, that **hotcontrol cDT+** is running correct after exchange of fuses on the components.

## 19.2 HTC 06/15 Replace Heating Thermocouple Card



Please pay attention to ↗Security References (page 8)! Identify component.

Please pay attention to ↗Security References (page 8)!



Working on **hotcontrol cDT+** is only allowed in de-energized status of **hotcontrol cDT+**.



Working on **hotcontrol cDT+** may be carried out by authorized and skilled qualified personnel only.



The action concerning the handling of ESD devices must be observed!  
Electrostatic sensitive devices!



Desktop housing

Deenergize hot runner controller.

Unlock and open front door by double bit lock.



Cards count at **hotcontrol cDT+** desktop housing from **right to left**.

**hotcontrol cDT+**

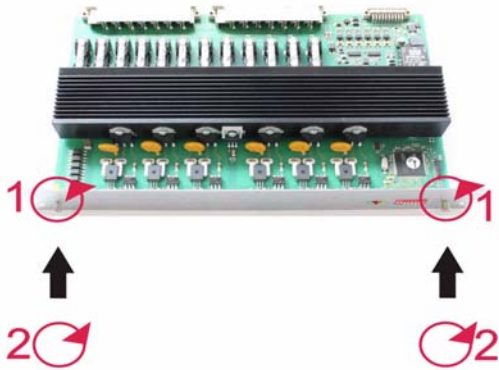
DIP switch setting (binary coded)

DIP  
ON



DEC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20...
1	Black		Black		Black		Black		Black		Black		Black		Black		Black		Black	
2		Black	Black			Black			Black			Black		Black			Black		Black	
3				Black	Black	Black	Black				Black	Black	Black	Black						Black
4								Black	Black	Black	Black	Black	Black	Black	Black					
5...																Black	Black	Black	Black	Black

### Replace card



(1) Loosen card locking and ensure that the loosened screws do not fall into the device.

Lift the card out of the slot carefully.

Set DIP switch of the spare card identical to the removed card.

Insert spare card carefully into the slot into the guide brackets top/bottom and regard the latching of the connectors.

(2) Tighten locking for card.



Desktop housing

Close and lock front door by double bit lock.

After reconnection of the power supply and the waiting for the start-up time of all components are either

- the manufacturer own operating and display unit or
- the visualization of the machine control

to check, that **hotcontrol cDT+** is running correct after exchange of the components.

### 19.3 Replace Control&User Interface CUI07

If it is necessary to replace a Control&User Interface CUI07, you should first contact the manufacturer/supplier for advice.



## 20 Delivery Status Standard

The available parameters, views, functions and info center selection items for delivery status Standard for the particular user (Standard user S; user prof P; user admin has access to everything) are listed as follows (X: active; O: deactive).

### 20.1 Parameters

Type	Characteristic	Description	Default-Setting	Unit	S	P
Parameters	[P001]	Setpoint value	0.0	*)	X	X
Parameters	[P002]	Manual mode	OFF	n.a.	X	X
Parameters	[P003]	Output value	0.0	%	X	X
Parameters	[P004]	Current setpoint value	0.0	A	X	X
Parameters	[P005]	Current tolerance	20.0	%	O	X
Parameters	[P006]	Zone	ON	n.a.	X	X
Parameters	[P007]	Standby setpoint value	100.0	*)	X	X
Parameters	[P008]	Boost setpoint value	0.0	*)	X	X
Parameters	[P009]	Lower setpoint value limit	0.0	*)	O	X
Parameters	[P010]	Upper setpoint value limit	500.0	*)	O	X
Parameters	[P011]	Upper relative limit value	5.0	*)	X	X
Parameters	[P012]	Lower relative limit value	-5.0	*)	X	X
Parameters	[P013]	Upper absolute limit value	500.0	*)	O	X
Parameters	[P014]	Lower absolute limit value	0.0	*)	O	X
Parameters	[P015]	Start-up mode	ON	n.a.	X	X
Parameters	[P016]	Start-up time	15.0	min	X	X
Parameters	[P017]	Boost time at start-up mode	0.0	min	X	X
Parameters	[P018]	Boost time	0.0	min	X	X
Parameters	[P019]	Automatic leading zone operation	OFF	n.a.	O	X
Parameters	[P020]	Manual mode after sensor break	OFF	n.a.	O	X
Parameters	[P021]	Temperature Ramp	0.0	*)	O	X
Parameters	[P022]	Automatic ramp	OFF	n.a.	X	X
Parameters	[P023]	Leading zone	0	n.a.	X	X
Parameters	[P024]	Leading zone correction	0	%	X	X
Parameters	[P025]	Proc.monitor. tolerance	20	%	X	X
Parameters	[P026]	Proc.monitor. operating point	0	%	X	X
Parameters	[P027]	Heat'n'Dry	OFF	n.a.	O	X
Parameters	[P028]	MoldCheck max. wait time	0.5	min	X	X
Parameters	[P029]	Limitation of output value	100.0	%	O	X
Parameters	[P030]	Identification	ON	n.a.	O	X
Parameters	[P031]	Loop control	OFF	n.a.	O	X
Parameters	[P032]	Cutback	0	*)	O	X
Parameters	[P033]	Algorithm	0	n.a.	O	X

Type	Characteristic	Description	Default-Setting	Unit	S	P
Parameters	[P034]	Proportional band	9.9	%	O	X
Parameters	[P035]	Derivative time	2	s	O	X
Parameters	[P036]	Integral time	10	s	O	X
Parameters	[P037]	Sampling time	0.5	s	O	X
Parameters	[P038]	Zone type	0	n.a.	O	X
Parameters	[P039]	Limit value hysteresis	1.0	*)	O	X
Parameters	[P040]	Sensor type	1	n.a.	O	O
Parameters	[P041]	Monitoring of sensor TCs	OFF	n.a.	O	X
Parameters	[P042]	External sensor NodeID	0	n.a.	O	O
Parameters	[P043]	External sensor input	0	K	O	O
Parameters	[P044]	Temperature offset	0.0	n.a.	O	X
Parameters	<b>[P045]</b>	<b>Zone name</b>			X	X
Parameters	<b>[P046]</b>	<b>Group number</b>	0	n.a.	X	X
Parameters	<b>[P047]</b>	<b>Relay heating</b>	0	n.a.	O	X

\*) Unit of the measurement input see parameter ↗[SP01]Temperature Unit (page 193)

In Pairing Mode all settings for the parameters [P\*\*\*], which are defined in the hot runner controller#Pairing-Mode-active, are valid for all zones.

## 20.2 System parameters

Type	Characteristic	Description	Default-Setting	Unit	S	P	PM
System parameters	<b>[SP01]</b>	<b>Temperature Unit</b>	ON	°C	O	X	
System parameters	<b>[SP02]</b>	<b>Automatic ramp tolerance band</b>	20.0	*)	O	X	
System parameters	<b>[SP03]</b>	<b>Automatic ramp setpoint value change</b>	30.0	*)	O	X	
System parameters	[SP04]	Identification of potential on sensor input	ON	n.a.	O	X	#
System parameters	<b>[SP05]</b>	<b>Maximum residual current</b>	60.0	mA	O	X	#
System parameters	<b>[SP06]</b>	<b>Offset zone numbering</b>	1	n.a.	O	X	#
System parameters	<b>[SP07]</b>	<b>Process monitoring mode</b>	0	n.a.	X	X	
System parameters	<b>[SP08]</b>	<b>Boost</b>	OFF	relative	O	X	
System parameters	<b>[SP09]</b>	<b>Standby</b>	OFF	relative	O	X	
System parameters	<b>[SP10]</b>	<b>Heat sink limit value</b>	80	*)	O	X	#
System parameters	<b>[SP11]</b>	<b>Auto Standby Time</b>	0.0	min	O	X	
System parameters	[SP12]	Operating setpoint limit value relative	ON	n.a.	O	X	
System parameters	[SP13]	Switch-on delay	0	s	O	X	
System parameters	<b>[SP14]</b>	<b>Passive zones present dimmed</b>	ON	n.a.	X	X	#
System parameters	[SP15]	MoldCheck rapid test	OFF	n.a.	O	X	
System parameters	[SP16]	Storing alarm status	OFF	n.a.	O	X	
System parameters	<b>[SP17]</b>	<b>Query for MoldCheck start</b>	OFF	n.a.	O	X	
System parameters	[SP18]	Application	OFF	n.a.	O	X	
System parameters	[SP19]	MoldCheck End temperature	70.0	*)	O	X	
System parameters	[SP20]	Mains voltage	230	V	O	X	#
System parameters	<b>[SP21]</b>	<b>Current limit SPL L1/L2/L3</b>	0.0	A	O	X	#
System parameters	[SP22]	Device name			O	X	#

In Pairing Mode PM all settings for the system parameters [SP\*\*], which are defined in the hot runner controller#Pairing-Mode-active, are valid for all zones.








Exception: settings of system parameters [SP\*\*], marked with # in row PM, are device specific.

### 20.3 Communication parameter
















Type	Characteristic	Description	Default-Setting	Unit	S	P
Communication	[CP01]	COM Address	0	n.a.	X	X
Communication	[CP02]	COM Protocol	PSG	n.a.	X	X
Communication	[CP03]	COM Baud rate	19200	n.a.	X	X
Communication	[CP04]	COM Stop bits	1 Stop bit	n.a.	X	X
Communication	[CP05]	COM Parity	No	n.a.	X	X
Communication	<b>[CP06]</b>	<b>CAN NodeID</b>	32	n.a.	X	X
Communication	[CP07]	CAN Baud rate	250k	n.a.	X	X
Communication	[CP08]	CAN Auto operational	ON	n.a.	X	X
Communication	[CP09]	ETH IP address 1	192	n.a.	X	X
Communication	[CP10]	ETH IP address 2	168	n.a.	X	X
Communication	[CP11]	ETH IP address 3	0	n.a.	X	X
Communication	[CP12]	ETH IP address 4	220	n.a.	X	X
Communication	[CP13]	ETH Subnet mask 1	255	n.a.	X	X
Communication	[CP14]	ETH Subnet mask 2	255	n.a.	X	X
Communication	[CP15]	ETH Subnet mask 3	255	n.a.	X	X
Communication	[CP16]	ETH Subnet mask 4	0	n.a.	X	X
Communication	[CP20]	ETH Gateway 1	0	n.a.	X	X
Communication	[CP21]	ETH Gateway 2	0	n.a.	X	X
Communication	[CP22]	ETH Gateway 3	0	n.a.	X	X
Communication	[CP23]	ETH Gateway 4	0	n.a.	X	X
Communication	<b>[CP24]</b>	<b>Pairing Mode</b>	OFF	n.a.	O	O
Communication	[CP25]	Pairing Mode IP-address 1	0	n.a.	O	O
Communication	[CP26]	Pairing Mode IP-address 2	0	n.a.	O	O
Communication	[CP27]	Pairing Mode IP-address 3	0	n.a.	O	O
Communication	[CP28]	Pairing Mode IP-address 4	0	n.a.	O	O
Communication	[CP29]	Interface timeout	0	s	X	X
Communication	[CP30]	Behavior on interface timeout	0	n.a.	X	X

The settings for the communication parameters [CP\*\*] are always device specific.

## 20.4 Views

Type	Characteristic	Description	Key	USB	S	P
Views		↗Standard view (page 34)			X	X
Views		↗Group view (page 37)			X	X
Views		↗Table view (page 38)			X	X
Views		↗View All (page 39)			X	X
Views		↗Trend view (page 42)			X	X
Views		↗MoldCheck view (page 40)			X	X

## 20.5 Functions

Type	Characteristic	Description	Key	USB	S	P
Functions		↗Program (page 61) load			X	X
Functions		↗Program (page 61) save			X	X
Functions		↗Program (page 61) delete			O	X
Functions		↗Program (page 61) export			X	X
Functions		↗Program (page 61) import			X	X
Functions		↗MoldSnapshot (page 67) create			X	X
Functions		↗MoldSnapshot (page 67) delete			O	X
Functions		Tool Coding			O	O

## 20.6 Info center

Type	Characteristic	Description	Key	USB	S	P
Infocenter		Temperature unit °C/°F (↗Change temperature unit (page 90))	<b>Info Center</b>		O	X
Info center		Operation left/right (↗Key arrangement (page 92))	<b>Info Center</b>		X	X
Info center		↗Ampere / Watt (page 94)	<b>Info Center</b>		O	X
Info center		↗Activate current transfer (page 96)	<b>Info Center</b>		X	X
Info center		↗System parameters (page 98)	<b>Info Center</b>		X	X
Info center		↗Communication (page 99)	<b>Info Center</b>		O	O
Info center		↗Configure table view (page 109)	<b>Info Center</b>		X	X
Info center		↗Software Download Slave (page 112)	<b>Info Center</b>		O	X
Info center		↗Hardware Setup (page 116)	<b>Info Center</b>		O	O
Info center		↗Language (page 121)	<b>Info Center</b>		O	X
Info center		↗Date / Time (page 123)	<b>Info Center</b>		O	O
Info center		↗Inputs / Outputs (page 125)	<b>Info Center</b>		O	O
Info center		↗Cleaning (page 129)	<b>Info Center</b>		X	X
Info center		Start learning phase of process monitoring (↗Process Monitoring (page 160))	<b>Info Center</b>		O	X
Info center		↗Pairing Mode (page 135)	<b>Info Center</b>		O	O

## 21 Appendix

### 21.1 Consumable and Spare Parts

Heating Thermocouple Card		
89180301-00	HTC 06/15 Heating Thermocouple Card	

## 21.2 Version History

Version	Date	Changes
1.00.05	11/29/2017	In detail, the following amendments/corrections were made: <ul style="list-style-type: none"> <li>▪ Chapter lift and carry precised</li> <li>▪ Delivery status functions key tool coding added</li> <li>▪ Delivery status list specified</li> <li>▪ DIP switch binary coded</li> <li>▪ Message tAL-&gt;Tmp</li> </ul>
1.00.04	9/15/2017	Customization for firmware from version CUI073417A. In detail, the following amendments/corrections were made: <ul style="list-style-type: none"> <li>▪ Tower housing</li> <li>▪ [CP29], [CP30] new</li> </ul>
1.00.03	7/7/2017	Customization for firmware from version CUI072417A. In detail, the following amendments/corrections were made: <ul style="list-style-type: none"> <li>▪ Process Monitoring specified</li> <li>▪ Pairing Mode</li> <li>▪ MoldCheck help key</li> <li>▪ Pinyin keyboard</li> <li>▪ User prof / admin specified</li> <li>▪ Automatic logout added</li> <li>▪ Symbols in header added</li> <li>▪ Colour coding for zone added</li> </ul>
1.00.02	2/10/2017	In detail, the following amendments/corrections were made: <ul style="list-style-type: none"> <li>▪ Figures/views updated</li> </ul>
1.00.01	11/30/2016	In detail, the following amendments/corrections were made: <ul style="list-style-type: none"> <li>▪ Relay heating</li> <li>▪ Tool Coding</li> <li>▪ Process Monitoring</li> <li>▪ Update-Process USB stick</li> <li>▪ Digital output 2 optional</li> </ul>
1.00.00	9/9/2016	First publication.
...	...	...
Manufacturer/Supplier		Hotset GmbH Hueckstrasse 16 58511 Lüdenscheid Germany Tel. +49 2351 4302-0 www.hotset.com info@hotset.com