FELLER ENGINEERING
GmbH

MCS® Hot Runner Controller
Precise and Convenient Process Control

Uncompromisingly simple and intuitive

www.fellereng.de/en

Long-lasting and reliable

Tiltable display

The tiltable display ensures an optimum reading angle and thus reduces incorrect entries. Even when the display is tilted, the display electronics are 100% protected against accidental contact.

3-sided LED light band

A 3-sided LED light band indicates the operating status, which can be seen from a distance. Green means that everything is ok. Yellow signals non-critical deviations from normal operation, while red indicates errors or critical deviations.
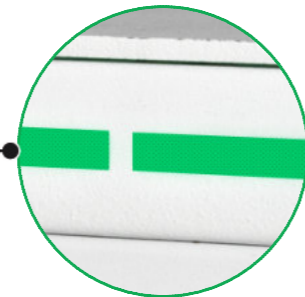
Service friendly design

The power cards are easily replaceable without opening the device.

The fuses are accessible from the outside and can be quickly replaced if necessary.
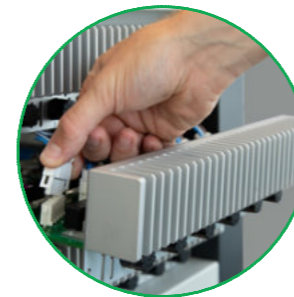
Power wiring 2,5 mm²

The maximum heating current of 16A is guaranteed even at increased temperature inside the device. This is ensured by the robust power wiring with 2.5mm² wire cross-section. In addition, only plug contacts are used that are designed for 16A even at elevated temperatures.
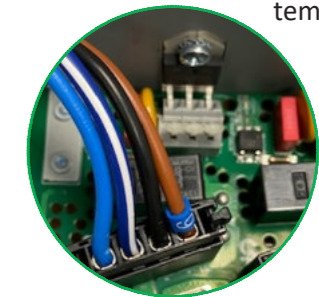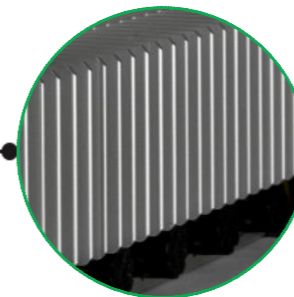
Short circuit proof outputs

The intelligent electronics detect short circuits when switching on and thus prevent the affected components from becoming defective due to excessive currents.
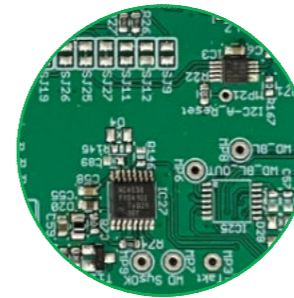
External heat sink

The external heat sinks ensure continuous heat dissipation. This maximizes the service life of the electronics.

16A outputs

Each individual output of the hot runner controllers is capable of supplying up to 16A. A special assignment of the outputs for nozzles or manifolds is not necessary.

Uncompromisingly simple and intuitive

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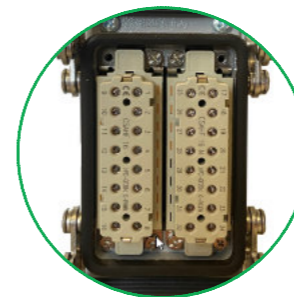
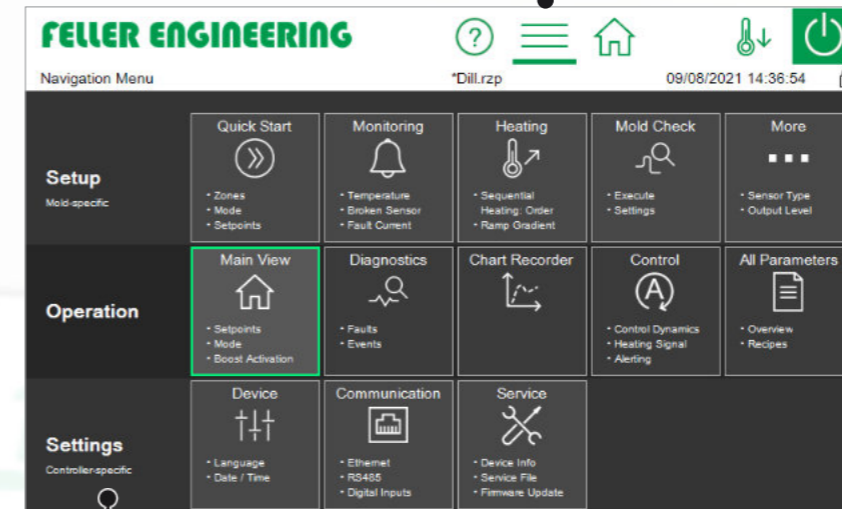## Clear screen layout with intuitive design

The menu bar is always visible and allows access at any time to the main functions such as navigation ☰, main view ⌂ and switching outputs on and off ⏻ as well as activating standby 🌡↓.

In the main view ⌂ all zones are displayed with the relevant process values. Via the menu icon ☰ you can access all functions and settings the controller has.
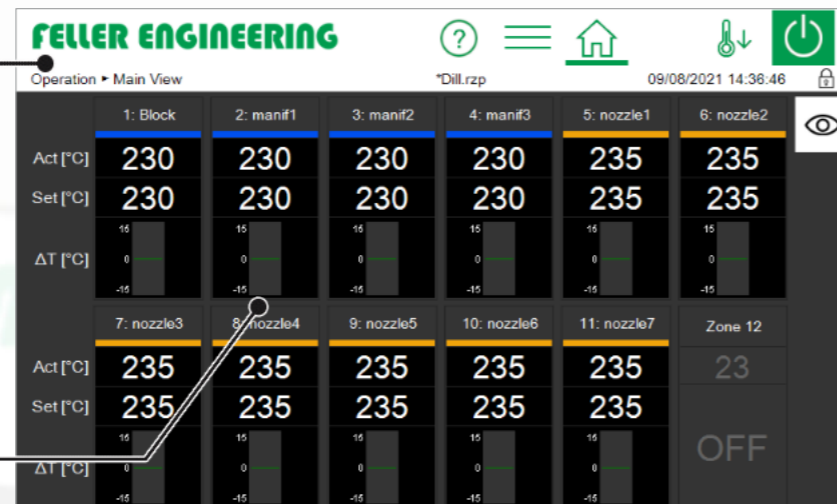
A clear and well-arranged structure of the user interface with icons and clearly visible touch fields (white) ensure intuitive and self-explanatory operation. A green background means that a function is selected.

Smart navigation

All functions are clearly displayed in the navigation menu and can be called up by one click. The navigation menu can be accessed via the menu icon ☰.
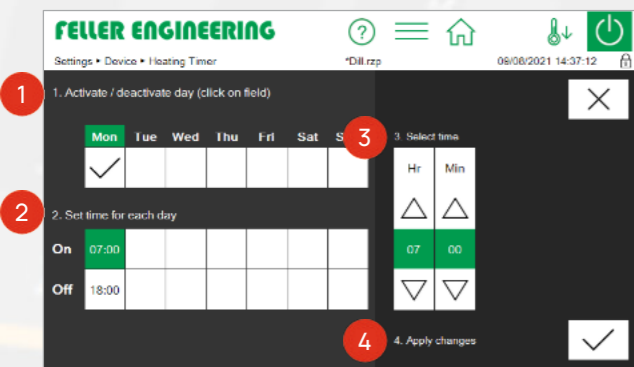
The functions are divided into the areas of mold-specific setup, operation and controller-specific settings in a user-oriented manner.

Operator guidance

A brief description of each function can be called up by touching the icon. This avoids tedious searching in the operating instructions.

Explanation at the touch of a button
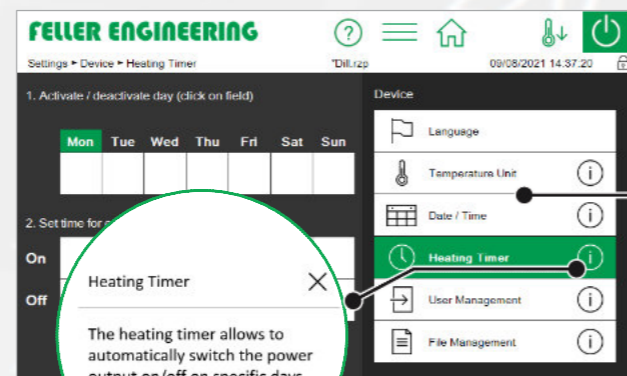
A brief description of each function can be called up by touching the icon ⓘ. This avoids tedious searching in the manual.

Individual zone display
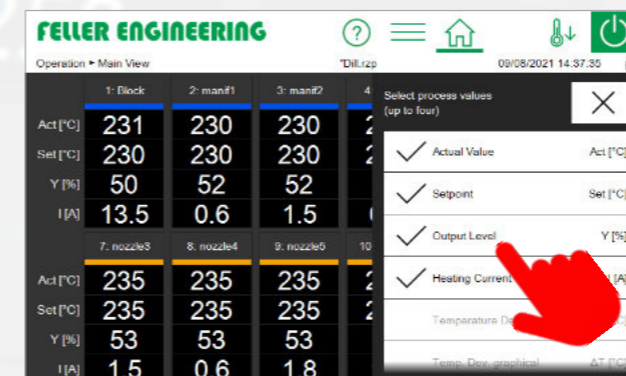
The operator can determine from numerous process values those that are to be shown in the zone display. Up to 8 values can be displayed per zone.

Quick start
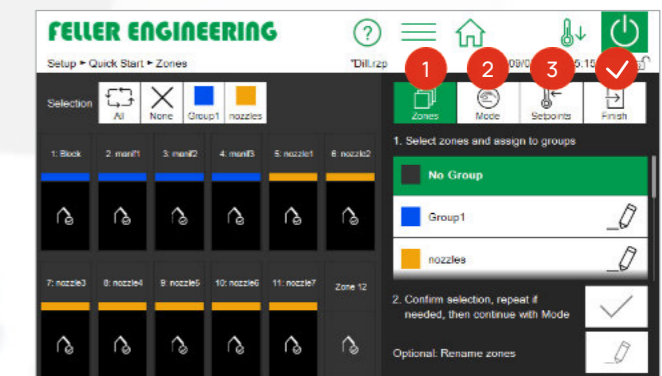
The quick start guides you through the essential settings (groups, operating mode and setpoints) to put the controller into operation quickly and safely when changing molds.

4

5

Integrated Service & Support

Troubleshooting made easy
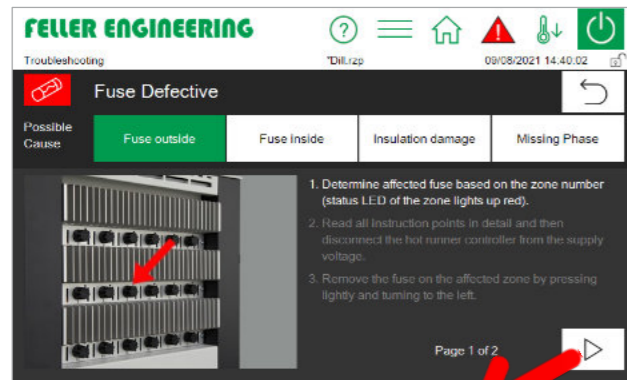
When a malfunction occurs, the user receives precise instructions in words and pictures on how to proceed with troubleshooting. By clicking on the arrow buttons ◁ ▷ the instructions can be displayed step by step.

This allows troubleshooting to be carried out extremely efficiently, thus keeping downtimes to a minimum.

In the example, the fault "Fuse Defective" is present.
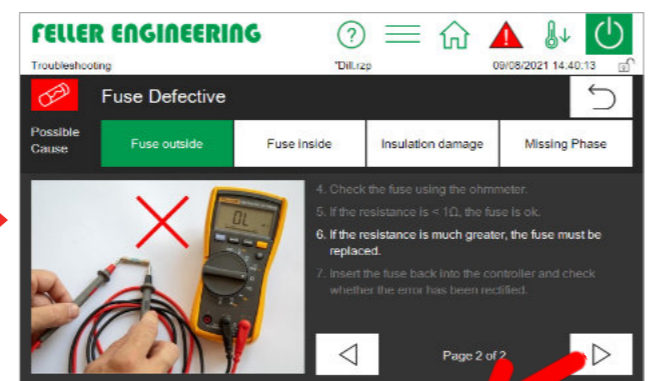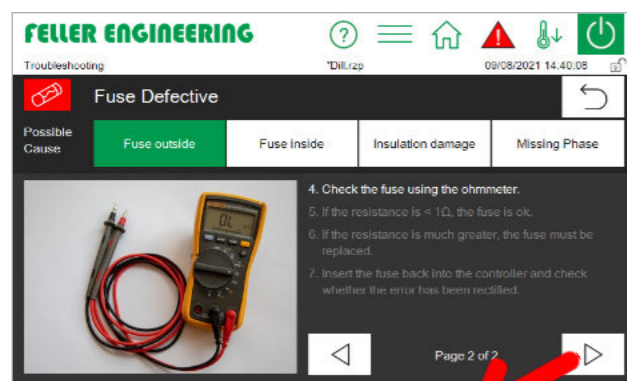
etc.

Mold check
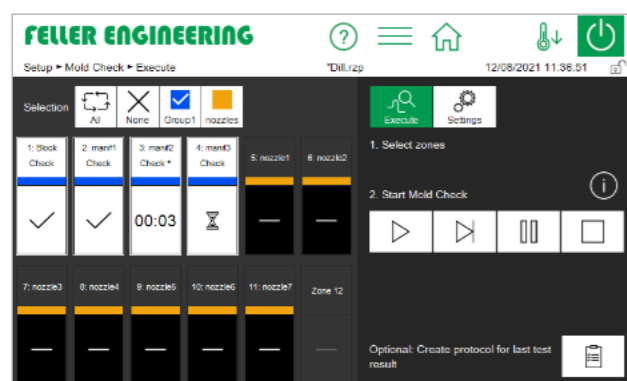
The mold check tests the wiring of sensors and heaters and is particularly useful when setting up a new mold.

The mold check detects swapped sensors, heaters or connectors, reversed sensor polarity and sensor short circuit.

The result can be saved in a protocol.

Chart recorder
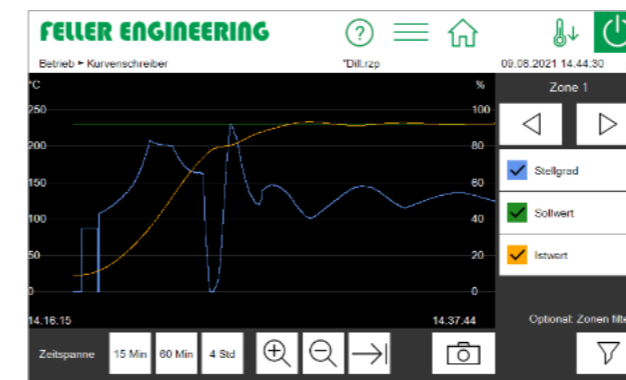
The chart recorder is used to analyze the control behavior of zones by displaying the time course of the process values setpoint, actual value and output level in a curve diagram.

The diagram can be saved as a screenshot for further analysis.

Event list

All changes of state of the controller, whether faults or changes of settings, are recorded chronologically in an event list.

With this complete documentation, processes can be optimized and errors can be tracked.
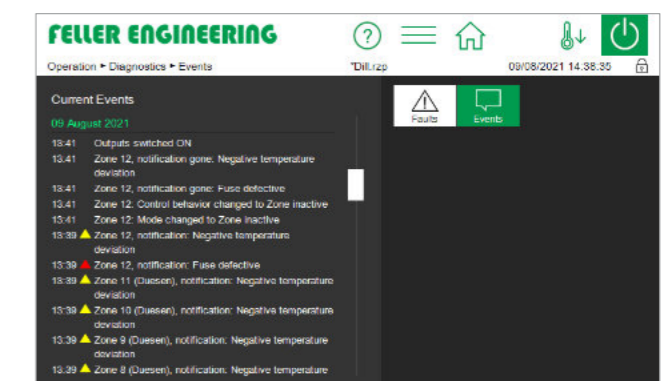
Service file
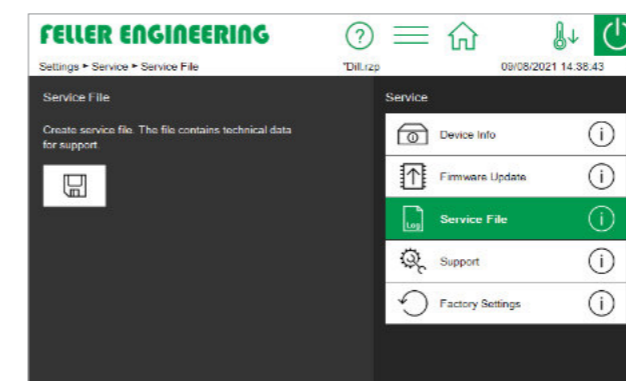
The service file contains technical data that provides valuable information for error analysis. It is helpful when a malfunction cannot be solved right away and therefore technical support has to be called in. Generated with one click, the file can then be forwarded by e-mail to Technical Support, who can perform an in-depth analysis based on the data.

Controller operation Industry 4.0

Operation with notebook / tablet etc.
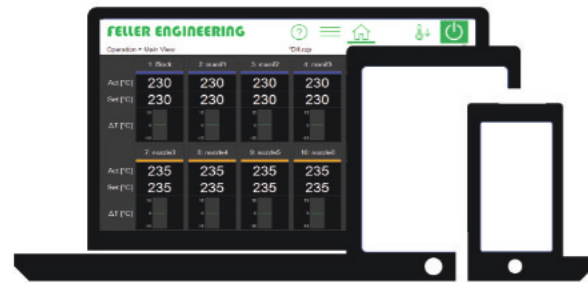
1. WiFi

2. ETHERNET

The **MCS**® hot runner controllers have a VNC (Virtual Network Computing, VNC for short) server. This technology enables the controller's screen content to be displayed on a remote computer. In this way, the **MCS**® hot runner controllers can also be operated via mobile devices such as notebooks, tablets or smartphones.

All that needs to be installed on the mobile device is a VNC viewer (available for free on the internet).

Operation via injection molding machine

With the VNC technology described above, the **MCS**® hot runner controllers can also be controlled remotely via an injection molding machine, provided it has a VNC client.

The controller can be operated from the injection molding machine in exactly the same way as via the integrated touch display. Operation on the controller is still possible without any restrictions.

OPC UA is a cross-industry communication standard. It is the basis of Euromap 82.2, which defines the parameterization of any hot runner controller with this standard by the injection molding machine.

As one of the first hot runner controller manufacturers, we have fully implemented the standard in our controllers.

Operation via touch monitor

Both tabletop and large units on rollers can be operated via a 15" or 19" touch monitor. The maximum cable length is 10 m.

Control signals

The injection molding machine can activate certain functions via digital control signals on the hot runner controller without the user having to take manual action.

The following functions can be activated under machine control:

- Boost
- Switching outputs on and off
- Enable the output signals
- Standby
- Switching additional heaters on and off

Flexibility for your process

Control up to 360 zones in a device network

The device network allows several **MCS**® hot runner controllers connected via Ethernet to be used as one device. All settings can then be made centrally from one controller. This allows applications with up to 360 zones to be implemented.

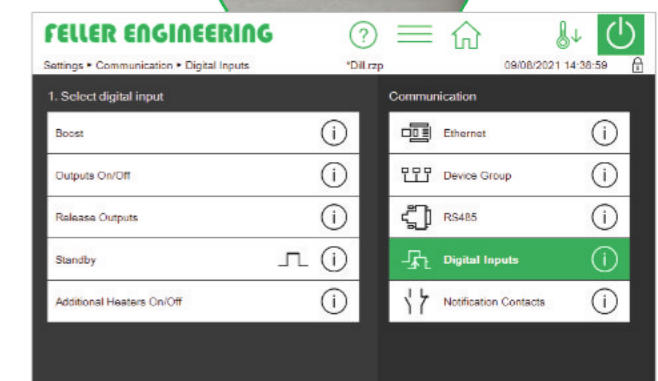Setting the controller network is very simple. The user is guided through the settings step by step. In this way, the service philosophy of the **MCS**® hot runner controllers is also strictly followed here. Even untrained personnel can operate the controller safely.

Function additional heaters
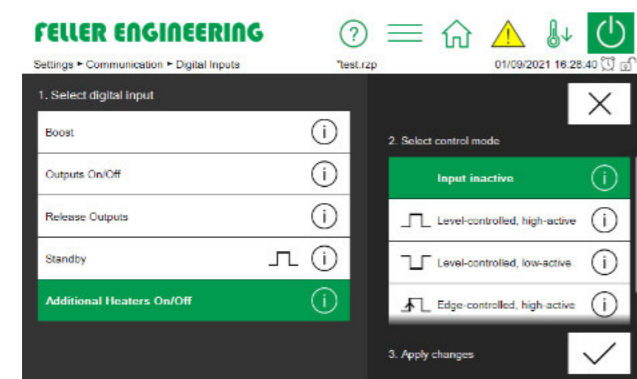
The function "additional heaters" supports, for example, the preheating of molded parts in a 2-step production process before they are fed into the actual injection molding process.

Selected heaters of the preheating station can be switched on and off separately via a digital input on the controller.

More Functions

- Recipe management

- User levels with password protection

- Boost, Standby

- Further heating in case of sensor break - Heating can be continued with a freely selectable output level, with the medium output level or with the output level of a reference zone.

- Comprehensive monitoring functions for: Sensor break, reversed sensor polarity, sensor voltage, heater current, load short-circuit, heater interruption, temperature deviations, output level, fault current, fuse, triac, relay

- Timer - switch outputs on and off automatically at specific days and times

- Combined heating, sequential heating or combination of both functions, gentle heating (Softstart)

- Star/delta switching

- Languages: German, English, Spanish, French, Italian, Czech, Polish, Russian, Japanese, Chinese

MCS® Trolley

The **MCS**® trolley allows convenient placement and operation of the **MCS**® tabletop units.

The trolley is very stable and high quality construction and has a large storage compartment for cables. Furthermore, a shelf for storing documents is welded in. The smooth-running swivel castors ensure safe transport. With wheel locks, the trolley can be securely fixed.

Economy variant MCS®e

In addition to the **MCS**® series, an economy version with reduced functionality is available for the hot runner controllers.

The **MCS®e** series is available in two housing sizes with 2, 4, 6 or 8, 10, 12 zones.

The electronics of the **MCS**® series have been adopted for the Economy variant. This means that no compromises have to be made in terms of control quality and reliability.

Operation is via membrane keypad with 7-segment display. Two measured values are displayed per zone,

whereby it is possible to switch between setpoint and actual value or current and output level.

The status of each zone is displayed via four LEDs: manual mode, automatic mode, fault and zone selected.

The status of the controller is signaled via an LED band in the front. In control mode, this display lights up green. In the event of a warning or alarm, the display changes to yellow or red.

The controller can also be switched to standby via an external control signal.

Housing variants

Zones	2, 4 or 6	8, 10 or 12
Dimensions (W x H x D)	175 x 390 x 275 mm	205 x 390 x 275 mm

Functions

- Fast and precise control

- High-quality electronics guarantee maximum reliability

- Simple operation via clearly assigned function keys

- Multiple zones adjustable simultaneously

- 2 display values per zone: setpoint and actual value or heating current and output level

- Comprehensive monitoring functions for: Sensor break, reversed sensor polarity, sensor voltage, heater current, load short circuit, heater interruption, temperature deviations, output level, fuse, triac, relay

- Operating status visible from afar via LED band

- Star/delta switching for worldwide use

- Gentle heating (soft start)

- Simultaneous heating of all zones with definable temperature deviation

- Short circuit detection when activating the outputs

- Overvoltage protection for sensors

- Standby activation via control signal

Functions at a glance

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MCS® | **MCS®e**

Operation / Display

	MCS®	MCS®e
Operation tabletop devices	7" Touch-Display	7-Segment
optional	15" Touch-Monitor	-
Operation large devices	10" Touch-Display integrated or 19" Touch-Monitor	

User interface

	MCS®	MCS®e
Self-explanatory user interface	✓	-
Quick start	✓	-
Operator guidance in plain text	✓	-
Explanation of functions and settings at the touch of a button	✓	-
Index	✓	-
Individual zone diisplay	✓	-
Graphical display of temperature deviation	✓	-
1-Touch setpoint change	✓	-
Status display of the zones	✓	-
Clear fault display	✓	-

Funktionality

	MCS®	MCS®e
LED light band to indicate the operating status	3-sided	Only on front
Multi languages (10 languages as of 09/2021)	✓	-
Group zones	✓	-
Mold check	✓	-
Gentle heating	✓	✓
Sequential heatiing	✓	-
Boost	✓	✓
Standby	✓	✓
Combined heating	✓	✓
Controller network up to 360 zones	✓	-

	MCS®	MCS®e
Overvoltage protection for sensors	✓	✓
Star/Delta switching	✓	✓
User levels with password protection	✓	-
Timer	✓	-
Chart recorder	✓	-
Individual shut down of zones	✓	✓
Step-by-step troubleshooting guide	✓	-
Event list	✓	-
Service file	✓	-
Short circuit detection at power up	✓	✓
Recipe management	✓	-
Maintenance without opening device	✓	-

Extensive monitoring functions

	MCS®	MCS®e
Temperature alarms	✓	✓
Heating current	✓	✓
Heating circuit interruption	✓	✓
Fuse failure	✓	✓
Sensor break	✓	✓
Reversed sensor polarity	✓	✓
Fault current	✓	-
Output level	✓	✓
Triac defective	✓	✓
Relay defective	✓	✓

Data interfaces / protocols

	MCS®	MCS®e
Ethernet interface	✓	-
RS485	✓	-
USB	✓	-
OPC UA according to Euromap 82.2	✓	-

External control signals

	MCS®	MCS®e
Outputs On / Off	✓	-
Output enable	✓	-
Standby	✓	✓
Boost	✓	-
Additional heater On / Off	✓	-

Notification contacts

	MCS®	MCS®e
Notification contacts	2	1

Technical Data

Operation and display	7" touchscreen, resistive
Housing	
Housing material	Galvanised steel
Protection type	IP 20
Environmental conditions	
Operation temperature	0...50°C
Humidity	0...90% rel. humidity, no condensation
Storage temperature	-25...+75 °C
Mains supply	
Supply voltage	3x 400 V AC, N, PE
Switchable to	3x 230 V AC, PE
Tolerance	+ 10% / -15%
Power consumption when idle	7 W + 5 W per power board
Control voltage	
Internal control voltage	+24VDC
Protection	1 x 2A medium delay (5 x 20mm)
Thermocouple inputs	
Thermocouple	FeCuNi (TYPE J) 0..830° switchable to: NiCr-Ni (TYPE K) 0..830°
Cold junction compensation	Integrated
Resolution	0.1 K
Accuracy	+/- 0,25K
Load outputs	Bistable, electrically insulated
per zone	1x heating, 230V AC switching
Control time (phase angle /pulse package	10 ms at 50 Hz – 8.3 ms at 60 Hz
Current per zone	max. 16 A with 80% switch-on duration per zone
Minimum load	100W
Caution: observe the total load capacity of the electrical connection cable	
Signal shape	Pulse operation/phase control (automatic or manual selection)
Protection	2-pole; 6.3 x 32 mm Internal: SIBA TYPE 16A T External SIBA TYPE 16A GRL
Only use these fuse types!	2-polig; 6,3 x 32 mm Intern: SIBA TYPE 16A T Extern: SIBA TYPE 16A GRL Nur diese Sicherungstypen verwenden!
Alarm notification outputs	
3x relay contact	Potential-free for max. 250 VAC
Maximum current	4 A for cos φ = 1; 2A for cos φ = 0.5
Digital inputs	
Insulated, potential-free	16 – 30 V DC
Data interfaces	
Ethernet	CAT 5
RS485	D-SUB 9-pole
USB	USB 3.0 Standard

Dimensions

Tabletop devices 6/12 Zones
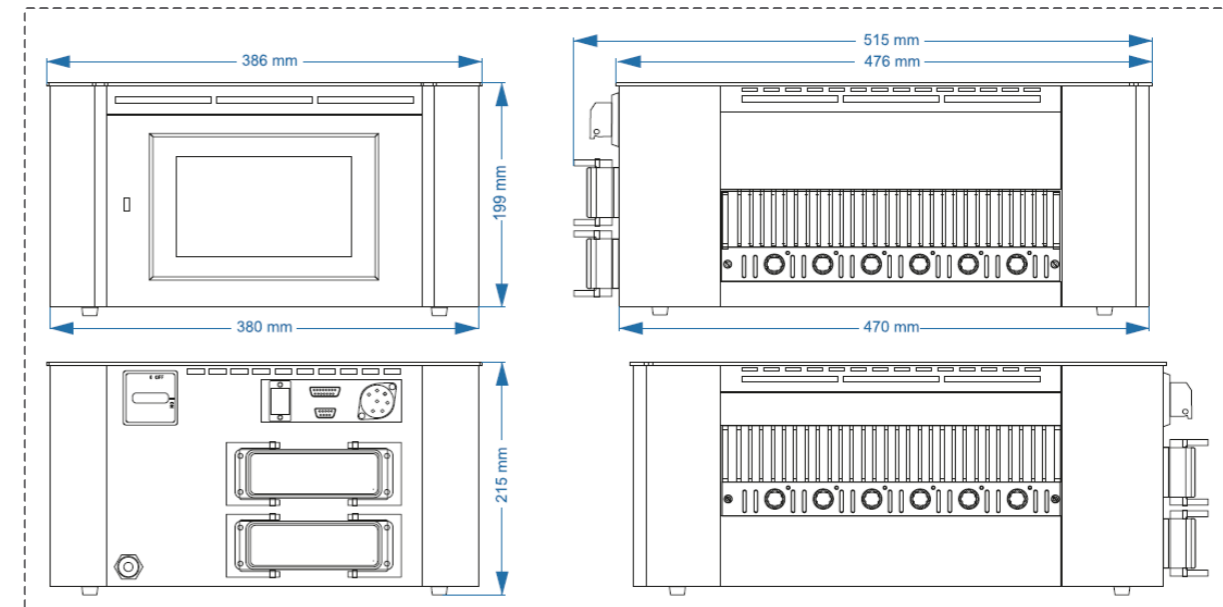
Tabletop devices 18/24 Zones
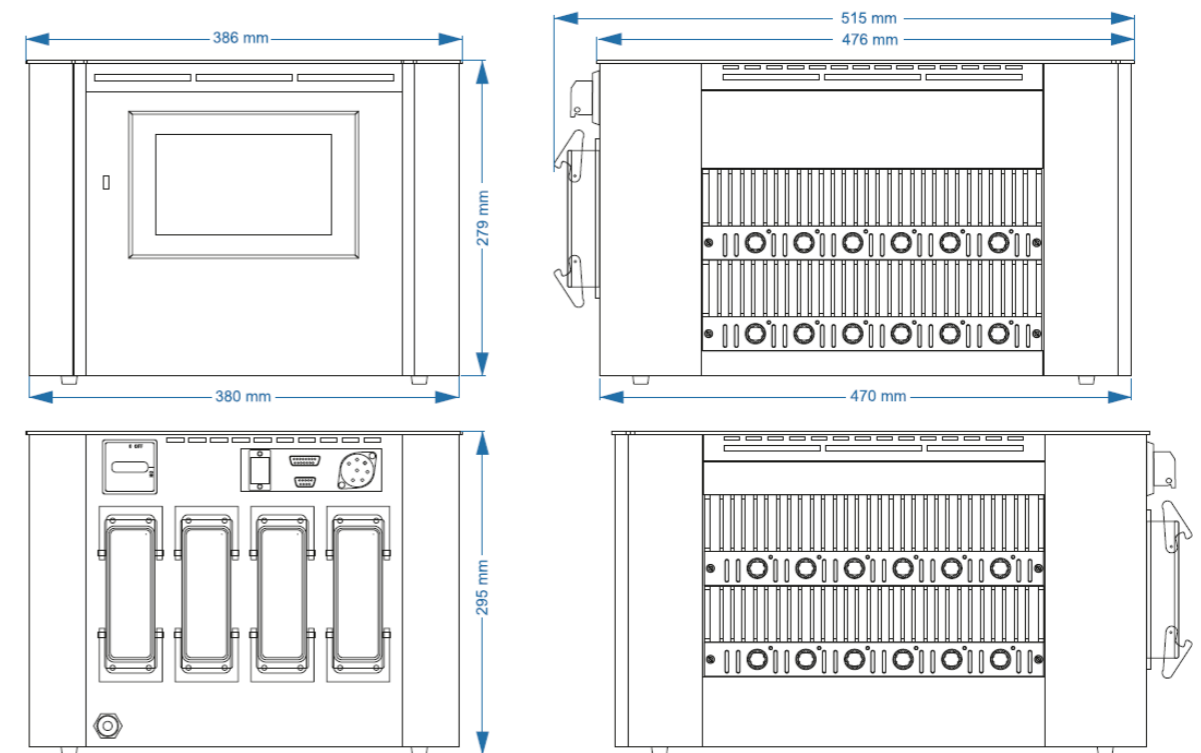
Dimensions

Tabletop devices 30/36 Zones

386 mm
515 mm
476 mm
359 mm
380 mm
470 mm
375 mm
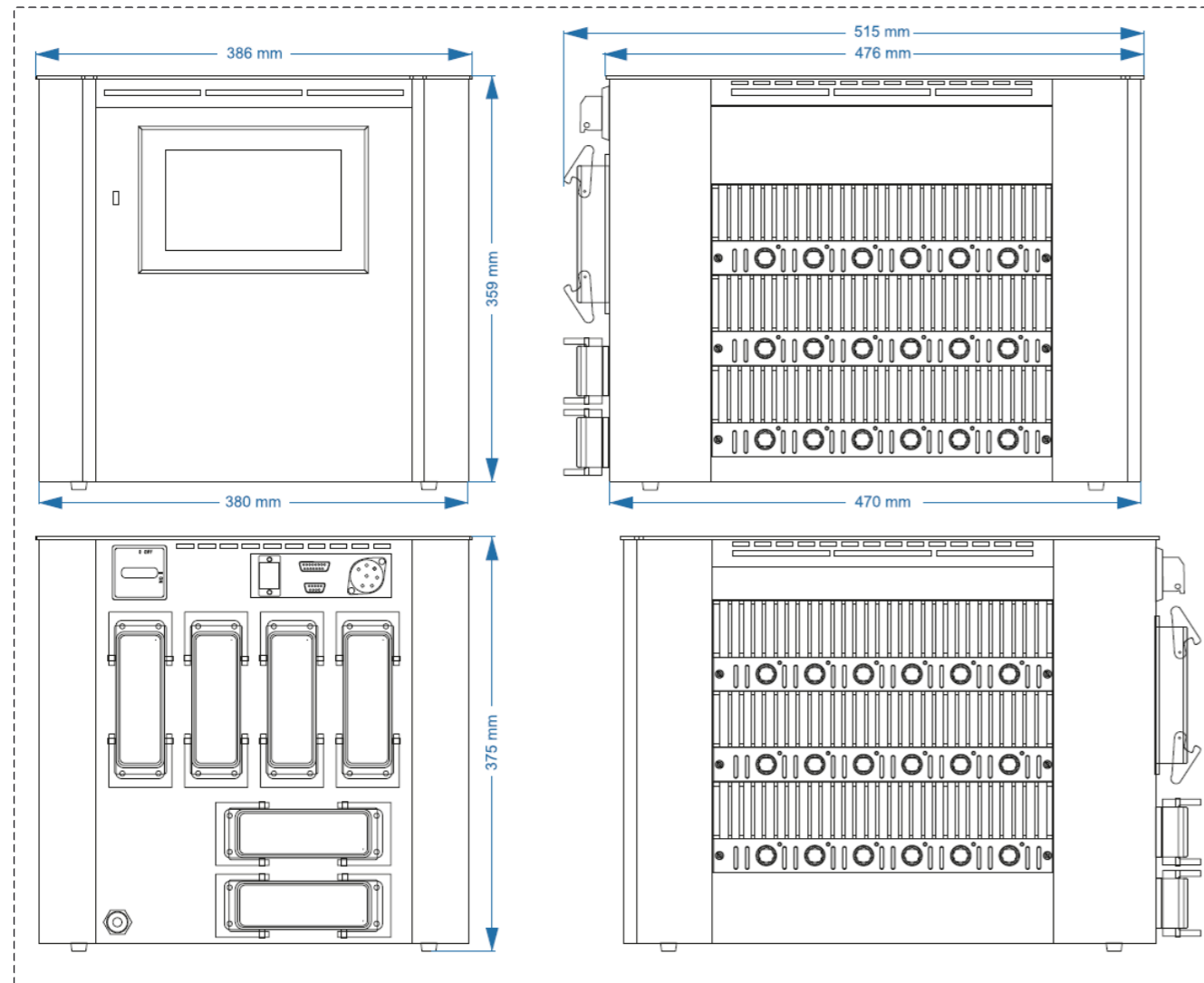
Large units on rollers 42 to 120 zones

506 mm
580 mm
630 mm
1060 mm
100 mm