

profiTEMP+ SYSTEM

INTEGRATABLE HOT RUNNER CONTROLLER

- » Modular hot runner controller for installation in the injection molding machine
- » From 6 to 192 control zones
- » Low space requirement due to extremely compact dimensions
- » Minimal wiring effort and extremely service-friendly
- » Identical range of functions to the profiTEMP+ hot runner controller
- » Innovative control algorithms tailored to the application
- » Complete integration into machines and machine operation thanks to the data interfaces, including via OPC 40082-2
- » Configuration and operation via the user interface familiar from profiTEMP+ via VNC
- » Smart Power Limitation limits power output to heating zones and protects against overloading the mains supply
- » cTUVus certification (UL) offers unrestricted direct use without special approval procedures for the USA and Canada.
- » Options offer individual design variants
 - › Savings on thermal cables by means of temperature measurement remote from the controller
 - › External reference junction when using copper cables instead of thermoelectric cables
 - › Additional measuring zones without heating outputs (e.g. with flexoTEMP modules)



SYSTEM COMPONENTS

Artikelnummer	Produkt	Bemerkung
RH 1600 /PNIO	pT+CUR /PNIO	Controller module with Profinet IO interface
RH 1600 /VARAN	pT+CUR /VARAN	Controller module with VARAN interface
RH 1600 /EC	pT+CUR /EtherCAT	Controller module with EtherCAT interface
RH 1610	pT+IO	Module with digital IOs and measuring inputs for residual current transformers
RH 1620 /02	pT+RACK /02	Rack with 2 slots, connection for heaters and sensors at the rear
RH 1620 /04	pT+RACK /04	Rack with 4 slots, connection for heaters and sensors at the rear
RH 1620 /06	pT+RACK /06	Rack with 6 slots, connection for heaters and sensors at the rear
RH 1620 /08	pT+RACK /08	Rack with 8 slots, connection for heaters and sensors at the rear
RH 1620 /02 /FC	pT+RACK /02/ FC	Rack with 2 slots, connection for heaters and sensors at the front
RH 1620 /02 /FC	pT+RACK /04/ FC	Rack with 4 slots, connection for heaters and sensors at the front
RHZ 1200/6/16/R	HTC 06/15	Plug-in card with heating outputs and temperature measuring inputs for 6 control zones

ACCESSORIES

Artikelnummer	Produkt	Bemerkung
RR 2100 /pTBC	flexoTEMP pTBC	Bus coupler between profiTEMP+ and flexoTEMP modules
RR 2100 /BE	flexoTEMP BE	Adapter module for system bus
RR 2300 /TCPT08	flexoTEMP TCPT 08	For options External temperature measurement and Additional measuring zones
RR 2300 /TC12	flexoTEMP TC 12	For options External temperature measurement and Additional measuring zones
RR 2300 /PT08-3	flexoTEMP PT 08-3	For options External temperature measurement and Additional measuring zones and External reference junction
RR 2300 /PT12-2	flexoTEMP PT 12-2	For options External temperature measurement and Additional measuring zones
RH 1640	pT+ERJ	For option External Referende Junction
RHZ 1600	RCT	Residual Current Transformer
RHZ 1610	CP	Blank covers for slots not used in the pT+rack (Cover Plate)
RRZ 1000/DSUB/9P/TS35	Fieldbus connector CANopen	

FUNCTIONS

Temperature control

PID control algorithm optimized for temperature control of hot runner systems.
Fully automatic autotuning function calculates the optimum control parameters during heat-up

Basic functions

Zone in closed-loop or open-loop operation
Temperature reduction by standby, temperature increase by boost (optionally time-controlled)
Zones can be switched in parallel - Guide zone operation in case of missing or defective sensor
Automatic guide zone operation after sensor breakage
Automatic controller operation after sensor break (with output level takeover)
Manual / time-controlled heating release after switch-on
Smart Power Limitation - Exact limitation of power output in case of mains overload

Sensor inputs

Thermocouple type J, L and K configurable
Resolution 0.1°F/0.1°C
Optional decentralized measured value acquisition (thermocouple type J, L and K or Pt100)

Heating outputs

Operation in pulse group mode or phase angle depending on operating status
Heating current display and monitoring
Optional residual current measurement
Zone-wise safety shutdown upon detection of a critical fault

Monitoring functions

Temperature alarm limits above and below setpoint (adjustable)
Overtemperature / undertemperature (adjustable)
Heating current outside tolerance band (adjustable)
Heating circuit interrupted
Short circuit in heating circuit
Fuse failure
Sensor break and polarity reversal, short circuit in sensor circuit
Fault current/leakage current measurement
Power controller in heating circuit permanently switched on
Early detection of leakage by process monitoring

Heating up

Classic start-up mode with preselectable start-up time for baking out the heaters
Heat'n'Dry - controlled, gentle heating to completely bake out the heaters (with control of the fault current)
Uniform, guided heating with automatic ramp
Staggered heating - heating up zones in groups one after the other

Diagnostic functions

MoldCheck - fully automatic check of the status of heaters and sensors in the hot runner, wiring check

Digital inputs & outputs

3 digital inputs (function adjustable)
1 function/alarm output designed as potential-free relay contact (function adjustable)

Data interfaces

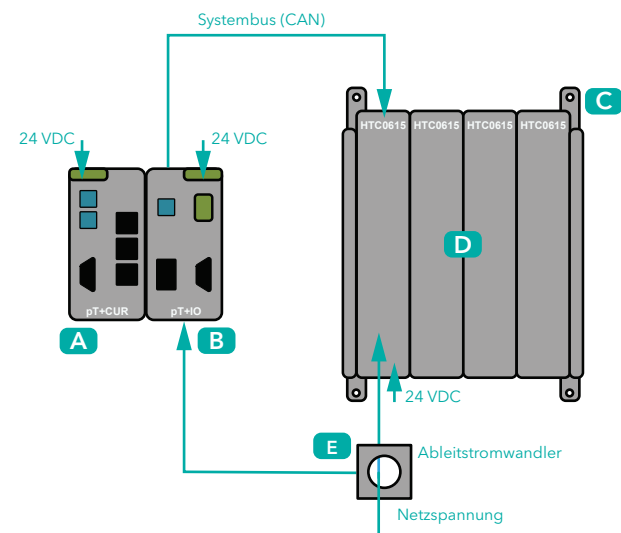
Ethernet (among others OPC 40082-2, VNC, Modbus TCP)
CAN (CANopen)
RS485 (among others PSG II, MODBUS RTU)
RTE (VARAN, EtherCAT or Profinet IO)

SYSTEM OVERVIEW

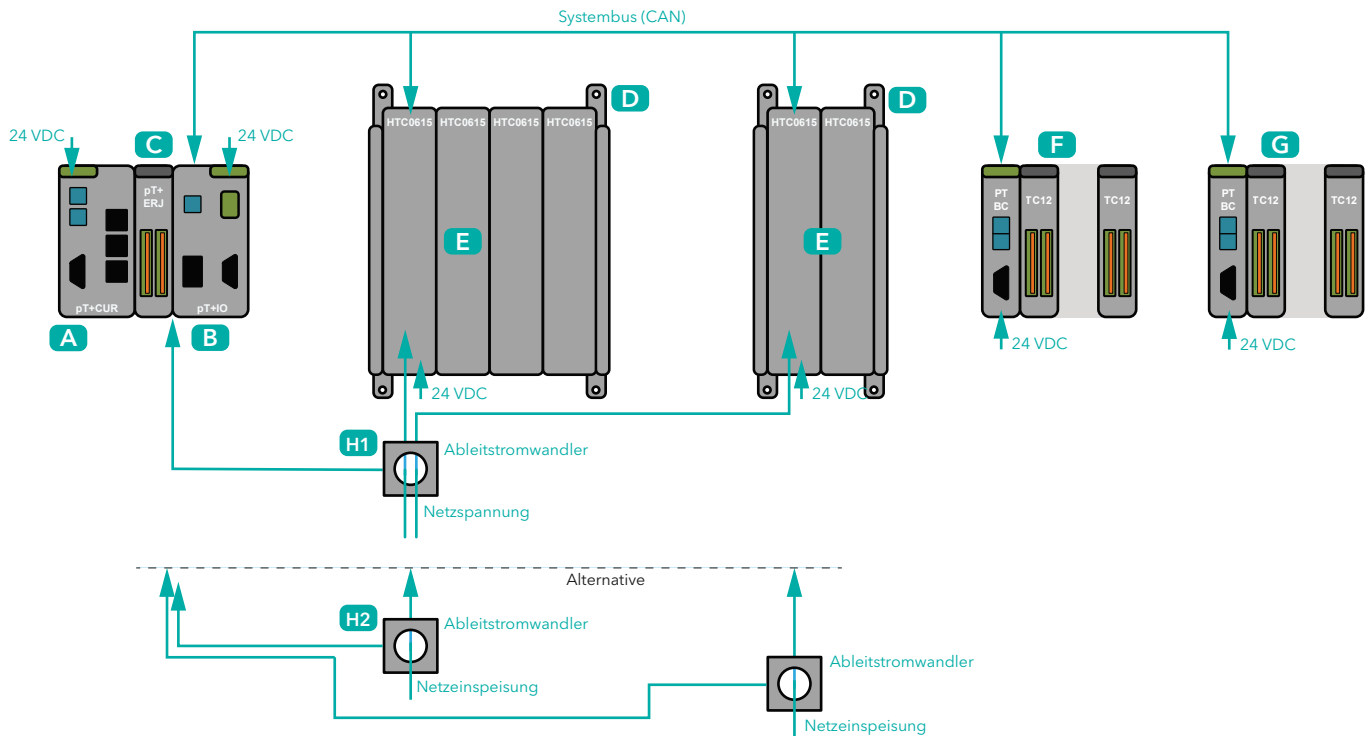
Standard

The standard version of the control system includes fault current measurement, digital inputs, and an alarm output.

	Designation	Comment
A	pT+CUR	Temperature controller for up to 192 control zones with data interfaces
B	flexoTEMP BE	Connection adapter for system bus to pT+Racks
C	pT+RACK	Rack with 2, 4, 6, or 8 slots for HTC 06/15 plug-in cards. Depending on the number of zones, several racks must be used; the maximum number of slots is 32 in total (corresponding to 192 control zones).
D	HTC 06/15 R	Plug-in card with heating outputs and temperature measurement inputs for 6 control zones
E	RCT	REesidual current device



With all options



Bezeichnung		Bemerkung
A	pT+CUR	Temperature controller for a maximum of 192 control zones with data interfaces
B	pT+IO	optional Module with 2 measuring inputs for leakage current transformers, 3 digital inputs and one digital output (relay contact). The number of pT+IO depends on the number of RCT leakage current transformers used. A maximum of 8 pT+IO can be used.
C	pT+ERJ	optional Measuring inputs for external cold junction. Possibility to connect PTD cold junction sensors, if no thermoline is used as sensor lines.
D	pT+RACK	Rack with 2, 4, 6 or 8 slots for plug-in cards HTC 06/15. Depending on the number of zones, several racks must be used, the maximum number of slots is 32 in total (corresponding to 192 control zones).
E	HTC 06/15	Plug-in card with heating outputs and temperature measuring inputs for 6 control zones
F	External temperature measurement	optional Is used when the sensor lines are not to be connected to the rack but are to be connected decentrally close to the tool. Consisting of bus coupler ptBC and modules TC12, TC16, TCPT08, PT12, PT16 or pT1000.
G	Additional measuring zones	optional Is used for the acquisition of measuring zones used in addition to the control zones. Consisting of bus coupler pTBC, and modules TC12, TC16, TCpT+08, pT+12, pT+16 or pT+1000.
H	RCT	optional Current transformer for measuring leakage currents. When using several pT+racks, one leakage current transformer can be used per rack (H2) or one leakage current transformer for several racks (H1).

Minimal expansion

Only the following components are required for the minimum expansion of a control system:

Bezeichnung	Bemerkung	
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C	pT+RACK	Rack with 2, 4, 6 or 8 slots for plug-in cards HTC 06/15. Depending on the number of zones, several racks must be used, the maximum number of slots is 32 in total (corresponding to 192 control zones).
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