

R0550

Universal Controller, 96 x 96 mm

3-349-258-03
1/6.03

- **Universal inputs**
Thermocouples, Pt100 and linear signals (mV, mA)
- **Available as** 2-step, 3-step, continuous action, step-action, cascade or slave controller
- **Universal outputs**
Relay, SSR, Triac, linear, servomotor
- **Output with linearization**
for quick opening and equal percentage valves
- **Program controller**
200 segments, 90 individual programs, 9 combined programs, timer function, 11 logic inputs and 14 digital outputs
- **Compact housing** with front panel dimensions of 96 x 96 mm per DIN 43700 for installation to control panels etc.
- **Convenient configuring program**



QUALITY MANAGEMENT SYSTEM



DQS Certified per
DIN EN ISO 9001 Reg. No. 1262

Applications

The R0550 is a compact universal controller for use in a multitude of applications.

In addition to temperature measurement, it is also used for measuring pressure, fill-level and flow.

Typical applications include furnace manufacturing (steel, casting, ceramics and glass industries), heat treating in hardening furnaces, food processing (breweries, dairies and coffee roasting), drying equipment and steam boilers.

Characteristic Values	
Delay T_u	125 ms
Sampling time - linear inputs	125 ms
Sampling time - TC and PT100	250 ms

Applicable Regulations and Standards

IEC 61010-1 / DIN EN 61010-1/ VDE 0411 T1	Safety requirements for electrical equipment for measurement, control and laboratory use
IEC/EN 61326	Electrical equipment for control technology and laboratory use – EMC requirements
EN 60529/IEC 529	Degrees of protection provided by enclosures (IP code)

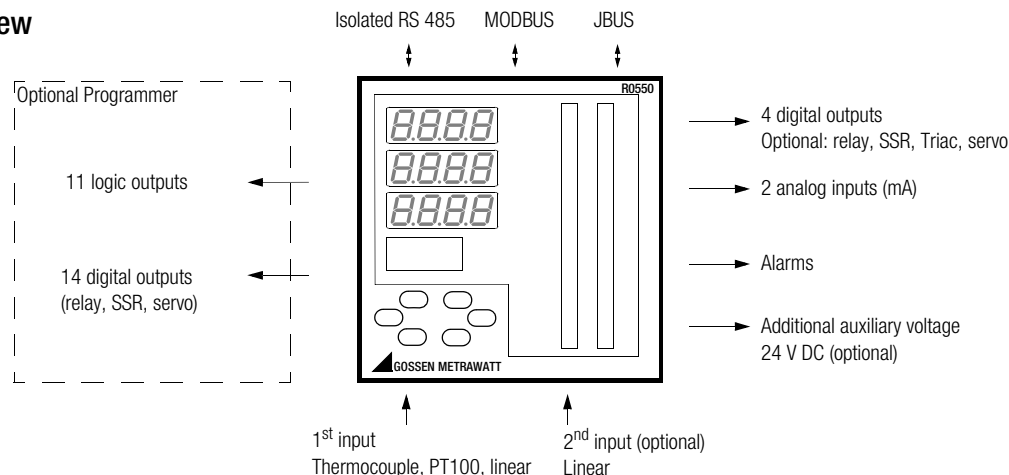
Features

- PID algorithm
- SMART self-optimization
- External setpoint (slave controller)
- Setpoint ramp
- Heating current monitoring (with external current transformer)
- Step-action controller with or without repeater
- Continuous-action controller and split range
- Input signal square root
- Process, range and deviation alarms
- Alarms dependent upon control variable
- Output limiting (upper and lower limit values)
- Interface (isolated RS 485, MODBUS, JBUS)
- IP 65 , NEMA 4X
- Connection of 2, 3 or 4-wire transmitters (24 V DC)
- Soft-start function
- Security code for operating functions

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Device Overview



1 Measurement Inputs

All inputs are calibrated at the factory and can be selected at the keypad. A digital filter can be used for the displayed value. The filter's time constant can be programmed within a range of 0 to 8 seconds.

Sampling rates: 125 ms for linear inputs
250 ms for thermocouples and Pt100

Linear Measurement Inputs (mA and V)

Input linearization Programmable square root function
Display Programmable from -1999 to 9999 with the keypad
Decimal point Programmable to any position

Impedance Input	Impedance
0 - 60 mV	> 1 M Ω
12 - 60 mV	
0 - 20 mA	5 Ω
4 - 20 mA	
0 - 5 V	> 200 k Ω
1 - 5 V	
0 - 10 V	> 400 k Ω
2 - 10 V	

Thermocouple Measurement Input

Type J, K, T, E, N, S, R, B, L, U, G, D, C, Ni/Ni 18% Mo., °C or °F
Compensation error for cable resistance Max. $\pm 0.1\%$ of input divergence with impedance $\leq 100 \Omega$
Burn-out Detection of open input circuit (broken cable or sensor) with programmed under-range or over-range display
Reference junction Automatic compensation of ambient temperature from 0 to 50° C, compensation error: 0.1° C / °C
Input impedance > 100 k Ω
Calibration per IEC 584-1

TC Type	Scale, °C	Scale, °F
L	-100 / 900	-150 / 1650
J	-100 / 1000	-150 / 1830
K	-100 / 1370	-150 / 2500
T	-200 / 400	-330 / 750
U	-200 / 600	-330 / 1110
E	-100 / 800	-150 / 1470
N	-100 / 1400	-150 / 2550
S	-50 / 1760	-60 / 3200
R	-50 / 1760	-60 / 3200
B	0 / 1820	32 / 3300
G	0 / 2300	0 / 4170
D	0 / 2300	0 / 4170
C	0 / 2300	0 / 4170
Ni	0 / 1100	0 / 2000

Measurement Input for Pt100 Resistance Thermometer

Type Pt 100, 3-wire connection, °C or °F
Calibration Per DIN 43760
Cable resistance Max. 20 Ω per conductor with non-measurable resistance
Burn-out Detection of broken sensor, or one or more cables. The device indicates short-circuiting if sensor resistance is less than 12 Ω .

Type of Input	Scale
Pt 100	-200 / +850° C
DIN 43760	-330 / +1560° F

Additional Measurement Input (optional)

A) This input can be set up as a trimming function with the programmer (algebraic sum of this value and the operative setpoint).
B) This input can be set up as a trimming function, or as an input for the external setpoint without the programmer.
Type Non-isolated
Display Programmable from -1999 to 9999, the decimal point appears at the same place as in the main display.

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Sampling interval	500 ms
Accuracy	± 0.2% of the scale range value, ± 1 digit at 25° C and nominal operating voltage
Thermal deviation	300 ppm per °C

Impedance Input	Impedance
0 - 20 mA	5 Ω
4 - 20 mA	
0 - 5 V	> 200 kΩ
1 - 5 V	
0 - 10 V	> 400 kΩ
2 - 10 V	

2 Outputs

The R0550 can be equipped with up to 4 digital outputs (relay, SSR, Triac or servomotor), and up to 2 linear outputs (mA). The outputs are freely programmable as digital, analog or servomotor outputs.

Algorithm	PID + SMART
Type	- One control output (digital or analog) - One control output (heating or cooling) - Two control outputs (heating or cooling)

Digital Outputs

Outputs 1 and 2

Each output can be individually programmed as a control output, an alarm output or an event output as either relay, SSR or Triac.

As relay output

Relay type	SPDT
Contact capacity	3 A at 250 V _{AC} to resistive load

As SSR output

Type	Non-isolated voltage outputs - Logic level 1: 14 V at 20 mA, max. 24 V at 1 mA - Logic level 0: < 0.5 V _{DC}
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As Triac output

Switching mode	Zero-crossing, isolated
Triac capacity	From 50 mA to 1 A / from 24 V _{eff} to 250 V _{eff}

Outputs 3 and 4

Each output can be individually programmed as a relay output, an alarm output, an event output or as a servomotor controller (output 3 opens, output 4 closes).

Type	SPST relay
Contact capacity	3 A at 250 V _{AC} to resistive load. The commons for outputs 3 and 4 are connected to the same rear terminal strip.

As servomotor output

Type	Two relays with interlocked contacts (outputs 3 and 4)
Servomotor output	- Closed loop - Open loop with valve position display - Open loop without valve position display
Potentiometer input counteraction	From 100 Ω to 10 kΩ
Servomotor stroke time	From 12 seconds to 3 minutes
Servomotor dead zone	From 1 to 50% of counteraction or valve stroke time

Analog Outputs

Outputs 5 and 6

Each output can be individually programmed as a control output, a measured value return or an operative setpoint return.

Type of output	Floating output, programmable for 0 - 20 mA / 4 - 20 mA
Display	Programmable from -1999 to 9999
Max. load	600 Ω
Accuracy	0.1% when used as a control output, 0.05% when used for analog return
Filter	A digital filter can be used for the return value. The time constant can be programmed within a range of 0 to 8 seconds.

3 Control Functions

Algorithm	PID + SMART
Types	- One relay output (digital or analog) - Two relay outputs - One relay output, split into two outputs (split range)
Inputs	Can be freely selected as analog, digital and servo inputs.
Digital outputs	Relay, SSR or Triac, time-proportional
Analog outputs	Linear in mA
Servomotor output	Two relays with interlocked contacts
Proportional range	Programmable from 0.5 to 999.0% of the input field. If PB is set to 0, the relay input becomes an On/Off input.
Hysteresis (control On/Off)	Programmable from 0.1 to 10.0% of the input field
Integral action time	Programmable from 1 second to 20 minutes, or disabled
Derivative action time	Programmable from 1 second to 10 minutes, or disabled
Integral biasing	Programmable - From 0 to 100% of the output field for one relay output - From -100 to 100% of the output's heating / cooling field for two relay outputs
Primary output	Cycle time: 1 to 200 seconds

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Secondary output	Cycle time: 1 to 200 seconds Relative amplification programmable from 0.20 to 2.00, relative to proportional range
Superimposition / dead zone	Programmable from -20% (dead zone) to +50% (superimposition) of the proportional range
Output limiting	The following can be entered for the primary and/or the secondary control output: - Upper limit - Lower limit - Maximum rate of change
Operating mode	AUTO/MAN, can be selected at the keypad or via logic input

Alarms for Monitoring the Secondary Output

Alarms can be triggered when the control output value is less than or greater than the programmed value.

Operating mode	Programmable as minimum or maximum
Threshold	Programmable from 0.1 to 100.0% of the output field
Hysteresis	Programmable in physical units from 0.1 to 20.0% of the control output

Heating Current Monitoring / OFD Function (optional)

Devices equipped with this function are capable of measuring current at a the power consumer connected to the control output with the help of a current transformer. During output on-time, the device measures load current and triggers an alarm if the measured current value falls short of the pre-programmed threshold value (a low current value is equivalent to partial or full load interruption). During output off-time, the device measures current loss and triggers an alarm if the measured value exceeds the pre-programmed threshold value (a high current value indicates short-circuiting of the drive unit).

Input current	50 mA _{AC}
Scale	Programmable from 10 A to 100 A in 1 A steps
Resolution	0.1 A with scale ranges of up to 20 A 1 A with scale ranges of 21 to 100 A
Active time period	For relay outputs: programmable For SSR outputs: logic level 1 or 0

Minimum active time period for executing measurement: 120 ms.
This function can only be used with a digital input which is programmed as a time-proportional output (relay or SSR).

4 Alarms

Programmable as direct or reverse. Each alarm can be programmed as a process alarm, a range alarm or a deviation alarm based upon the output value.

Reset	Programmable for each output as automatic or manual reset
Masking	Each alarm can be configured as a masked alarm or a standard alarm. This allows for the suppression of undesired alarm read-outs during power-up or after a setpoint change.

Process Alarm

Operating mode	Programmable as minimum or maximum
Threshold	Programmable within the input's field
Hysteresis	Programmable from 1 to 200 digits

Range Alarm

Operating mode	Programmable inside or outside of the range
Threshold	Two thresholds can be programmed: lower threshold from 0 to -1000 units, upper threshold from 0 to +1000 units,
Hysteresis	Programmable from 1 to 200 digits

Deviation Alarm

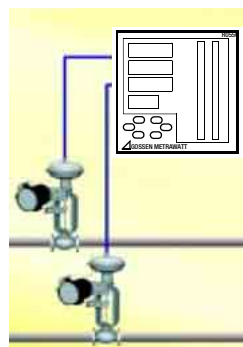
Operating mode	Programmable above or below
Threshold	Programmable from -1000 to +1000 units
Hysteresis	Programmable in physical units from 1 to 200 digits

Alarms for Monitoring the Primary Output

Alarms can be triggered when the control output value is less than or greater than the programmed value.

Operating mode	Programmable as minimum or maximum
Threshold	Programmable from 0.1 to 100.0% of the output field
Hysteresis	Programmable in physical units from 0.1 to 20.0% of the control output

5 Special Controller Configurations (optional)



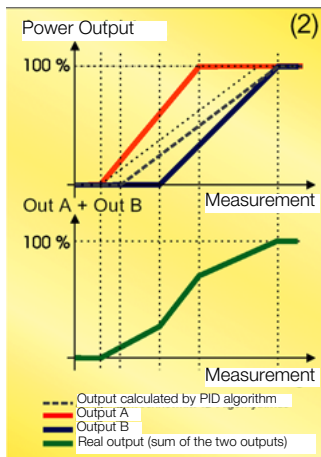
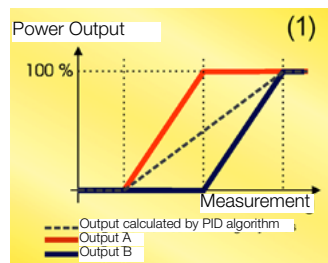
Split Range Output Function

Two independent outputs (two drives) can be controlled by means of a single control operation with this function. The ability to enter different bias and amplification values for the two outputs allows for:

- Improved setting accuracy: For example, instead of one large valve, two small valves can be used for improved flow rate adjustment by configuring the device as shown in drawing 1.

- Reduced consumption values: For example, it is advisable to start with only one of the available blowers in blow molding processes, and not to start up additional blowers until the first has reached 100% performance.

- Setup of a non-linear process with correction of the control outputs over 3 segments as shown in drawing 2.

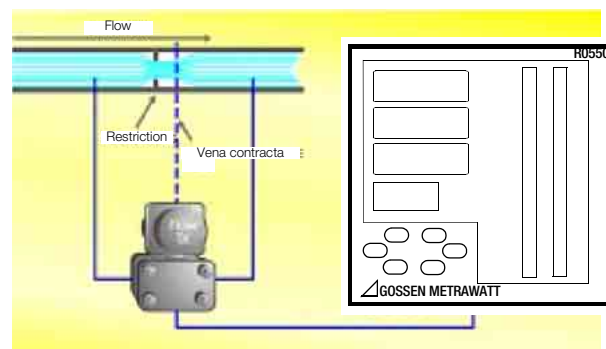


Measured Value Square Root

These devices provide users with the capability of generating the square root of the input signal. This function allows for power measurement with simple ΔP transformers, without any additional devices.

Additional Power Supply

These devices can be furnished with an additional, non-isolated power supply which simplifies connection of 2, 3 and 4-wire transmitters.

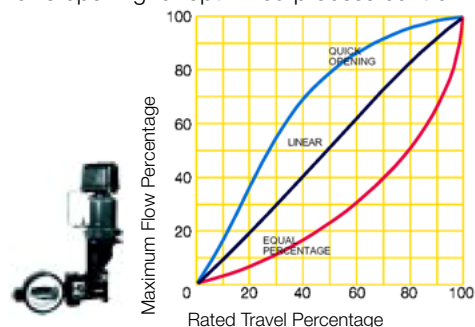


Pre-Programmed Output Characteristics

This device allows the user to select linearization in accordance with the characteristics of the two most common valve types:

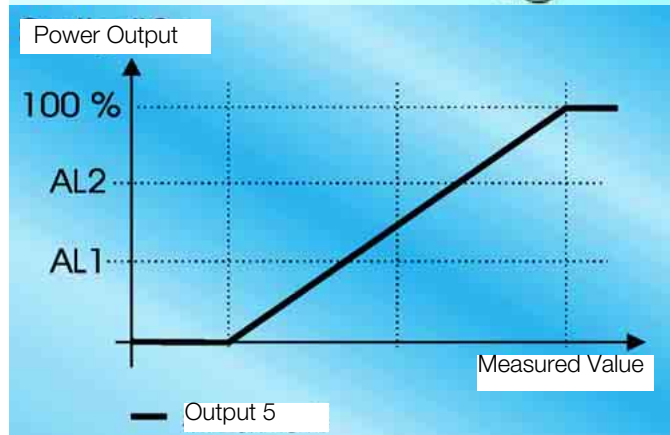
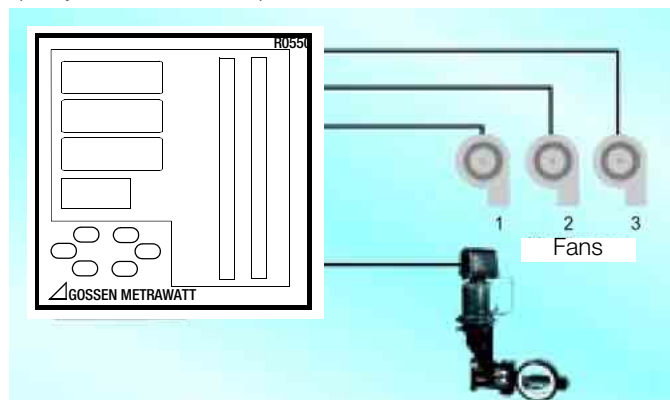
- Quick opening
- Equal percentage

This function allows for linearization of the relationship between flow and degree of valve opening for optimized process control.



Alarms Dependent upon Control Variable

This function makes it possible to set the alarm threshold directly to the controller's output value. This simplifies process control in applications where it is necessary to create an effect which is relative to the control output's percentage value. For example, in controlling a process by means of an air flow valve where the generator consists of three blowers, it is possible to cause the first blower to run continuously, and not to start up the second and third blowers until output power has reached a specified value: 33% (output power 1) and 66% (output power 2). This solution makes it possible to reduce consumption, and to improve the quality of the control sequence.



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6 Special Characteristics without Programmer

Setpoint

The R0550 controller without programmer is equipped with 4 local setpoints (selectable with an external contact), and one input for a remote setpoint (RSP). Changing from one setpoint to another is accomplished in steps, or with two different ramps (ramp for rising values and ramp for falling values).

Setpoint limiting	Programmable as lower or upper limit
Setpoint change	From 1 to 200 digits per minute, or disabled
Digital filter	A digital filter can be used for the value which is measured with the input for the remote setpoint (RSP). The time constant for this filter can be programmed within a range of 0 to 8 seconds.

Remote Setpoint (RSP) (optional)

The input for the remote setpoint can also be programmed for use as a trimming function. In this case, the value of the remote setpoint is added algebraically to the selected setpoint, and the resulting value is used as the operative setpoint.

Type	Non-isolated
Display	Programmable from -1999 to 9999, the decimal point appears at the same place as programmed for the main display.
Sampling rate	500 ms
Accuracy	$\pm 0.2\%$ of the scale range ± 1 digit at 25°C and nominal operating voltage
Thermal deviation	300 ppm per $^\circ\text{C}$

Impedance Input	Impedance
0 - 20 mA	50
4 - 20 mA	
0 - 5 V	> 200 k Ω
1 - 5 V	
0 - 10 V	> 400 k Ω
2 - 10 V	

Events

All digital outputs can be programmed as events. In this case, they are used to indicate the error status of an input, or the status of the device:

- Primary input error (over-range, under-range, interruption or short-circuit)
- Error at input for remote setpoint (RSP)
- Error at both measurement inputs
- Mode display: automatic/manual
- Display for type of setpoint: local/remote

Logic Inputs (optional)

This device can be furnished with 3 logic inputs which can be individually programmed for:

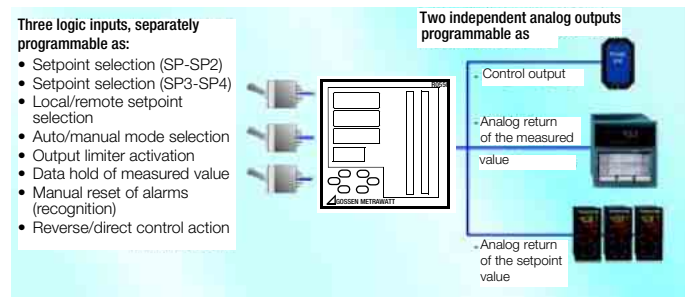
- Setpoint selection (SP-SP2)
- Setpoint selection (SP3-SP4)
- Setpoint type selection: local/remote
- Operating mode selection: automatic/manual
- Activate output limiting
- Measured value data hold function

- Manual reset of alarms (recognition)
 - Control action type selection: direct/reverse
- Input type Close contact (not energized)
Active logic level Closed or open, programmable

HOLD Function

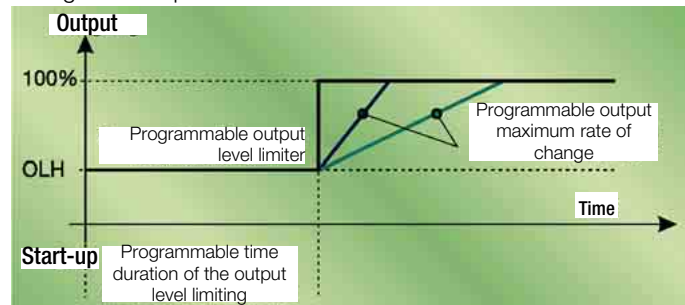
A logic input makes it possible to disable sampling of the inputs by saving the last measured value.

Example of Special Characteristics without Programmer



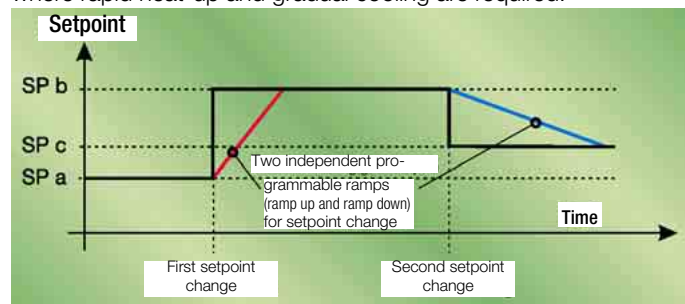
Soft Start Function

This function allows for gradual preheating. The service life of the heating elements is thus extended, and thermal shock is avoided. If this function is activated, the control output maintains reduced, programmable power for a specified period of time. The alarm masking functions allows the user to suppress erroneous displays during preheating. Maximum output power can also be programmed with these devices, in order to avoid thermal shock during normal operation.



Two Independent Ramps (up and down) for Adjustment to New Setpoints

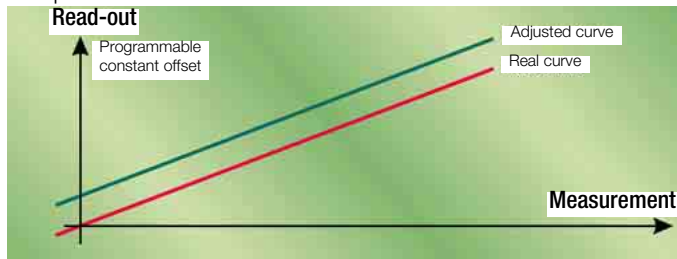
TKS / MKS controllers allow the user to program an up ramp and a down ramp for adjustment to new setpoints. Ramps are necessary for setpoint changes in some processes, for example where rapid heat-up and gradual cooling are required.



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Measured Value Offset

In some systems it is technically difficult to mount the sensor at an ideal location. The sensor is often situated too far from the ideal measuring point. This results in a difference between the measured value and the actual process value. TKS / MKS controllers allow for the selection of an offset value which compensates for this difference.



7 Special Characteristics with Programmer (optional)

Segments

200 segments are available. The following is possible for each segment:

- Enter duration in hours and minutes (up to 99 hours and 59 minutes) or minutes and seconds (up to 99 minutes and 59 seconds)
- Assignment of a group of PID parameters, selected from the 5 which are available
- Assignment of a wait band, selected from the 10 which are available

Individual Programs

90 individual programs are available. The following is possible for each program:

- Use of different numbers of segments, up to a maximum of 99
- Entry of a number of repetitions
- Entry of device performance characteristics after execution of the last programmed program cycle
- Assignment of up to 14 time-controlled events
- Assignment of a cycle end display
- Assignment of a profile end display

Combined Programs

Up to 9 combined programs are available. Each combined program may include up to 9 individual programs.

Available Functions

(during execution of a program)

EDIT	Programs can be created, deleted and modified with the edit function.
WAIT	This function automatically interrupts execution of the program if the process variable is not within the programmed wait band. Execution of the program is automatically resumed when the process variable is one again within the specified range.
HOLD	Execution of the program can be temporarily suspended with this function.

ABORT	Execution of the running program is stopped with this function, and the device is returned to the edit mode.
FAST	The program can be fast-forwarded (forwards and backwards) at 60 times the normal speed to a specified point within the profile at which program execution is then resumed.
JUMP	This function allows for jumping from the currently running segment to the beginning of the next segment, or the previous segment.

Selecting a Program with the Logic Inputs

The program to be executed can be selected with an external device (e.g. an SPC) via the logic inputs with the help of this function. Each input used for selecting programs corresponds to a magnitude (exponential number) of the binary code. Logic inputs Dig2, In1 and In4 are used in the following table for program selection.

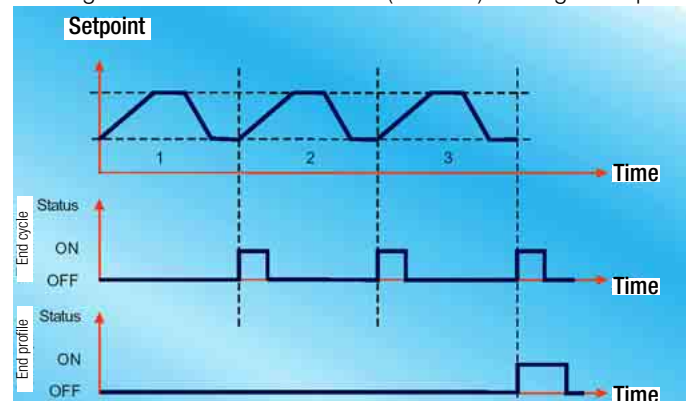
End Cycle and End Profile Functions

End Cycle

The end of the cycle can be displayed with this function by entering the duration and the status (on or off) of a digital output.

End Profile

The end of the profile can be displayed with this function by entering the duration and the status (on or off) of a digital output.



Special Functions

Clock Function (optional)

Execution of a program can be initialized in the absence of an operator with the help of this function. The following can be entered for the specification of automatic initialization:

- 1) Day(s) of the week, selectable as:
 - One day only (Monday, Tuesday etc.)
 - Every day
 - Every day except Sunday
 - Every day except Saturday and Sunday
- 2) Time of day
- 3) Program to be executed

The internal clock is equipped with a lithium battery which assures correct operation for more than ten years (even in the event of power outages).

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Output Power Off

This special operating mode simplifies control of processes which take advantage of range switches or other systems for interrupting control. This function is especially interesting when used together with the clock function. For example, if the relay for displaying the output power off status is used, it is possible to leave the system shut down entirely until the programmed point in time for automatic start-up and activation of the functions required for the power-up phase (soft-start and alarm masking) has been reached. From a technical standpoint, this function allows for simultaneous disabling of all relay outputs, returns, alarms and the control algorithm. The device functions as a simple display in this operating mode, thus allowing the user to check the process variables, even if the device is switched off or the range has been deactivated. When the controller is switched back on, it resets the integral component of the control signal to zero, and reactivates the soft start and alarm masking functions.

Additional Outputs (optional)

Only available for devices with 5 + 5 digital outputs. Function can be individually programmed as an event output.

Type	SPST relay
Contact capacity	0.5 A at 250 V AC to resistive load
Note	Contact C is common for all relays

Events

All digital outputs can be programmed as events. The following types of events can be programmed:

- Section event
- Time-controlled event
- Cycle end display
- Profile end display
- Running program display (run)
- Program interruption display (wait)
- "Output Power Off" status display
- Primary input error (over-range, under-range, interruption or short-circuited sensor)
- Error at both measurement inputs
- Operating mode display: automatic/manual

Logic inputs

These devices are furnished with standard 3 logic inputs which can be individually programmed for:

- Operating mode selection: automatic/manual
- Activate output limiting
- Manual reset of alarms (recognition)
- Control action type selection: direct/reverse
- Program run/hold function (programmable to level or transition)
- Program selection
- Abort program function

Input type	Close contact (not energized)
Active logic level	Closed or open, programmable

Additional Logic Inputs (optional)

Only available for devices with 4 + 4 logic inputs. Each additional logic input can be programmed for:

- Program start/hold function (programmable to level or transition)
- Program selection
- Abort program function

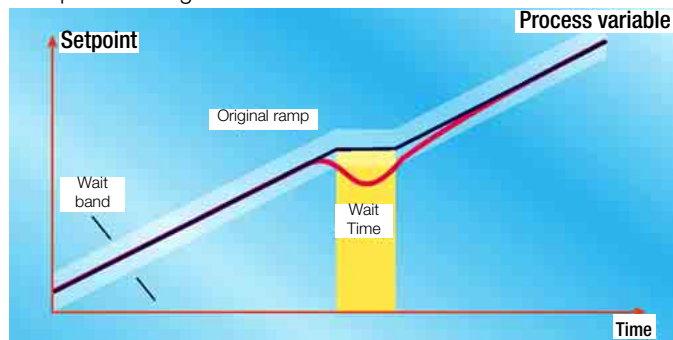
Input type	Close contact (not energized)
Active logic level	Closed or open, programmable

Tracking and Guaranteed Soak Functions

Up to 10 ranges are available for ideal execution of ramps and waiting times (each range is defined by means of a lower and an upper limit value). A different wait band can be assigned to each segment.

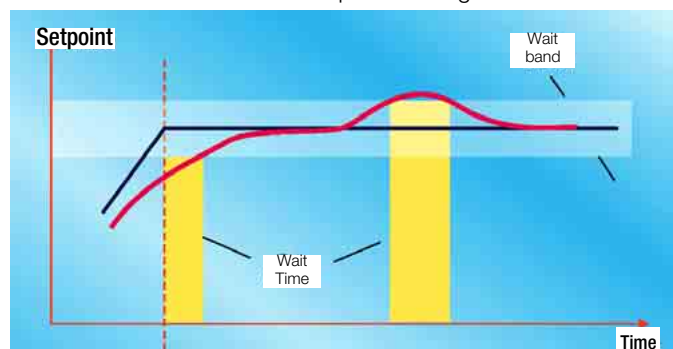
Tracking Function

If the process variable is not within the programmed range, execution of the ramp is suspended until the variable returns to the specified range.



Guaranteed Soak Function

This function assures that the material is kept at the programmed temperature for the programmed duration during execution of a waiting period. If the process variable is not within the programmed range, execution of the waiting period is suspended until the variable returns to the specified range.

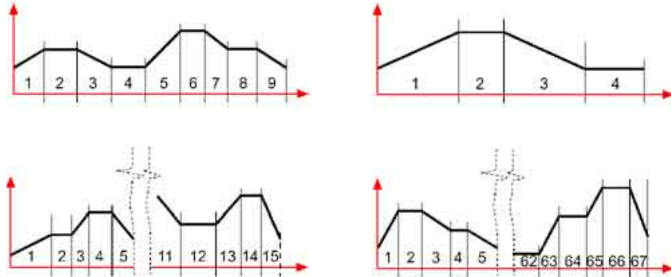


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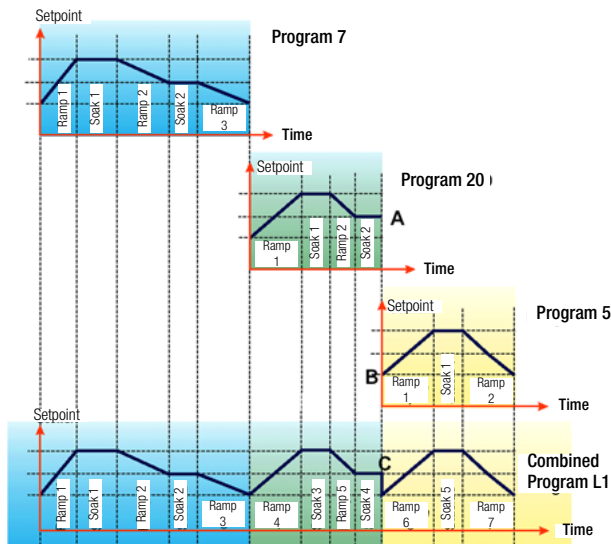
Examples of Special Characteristics with Programmer

Flexibility in Creating Programs

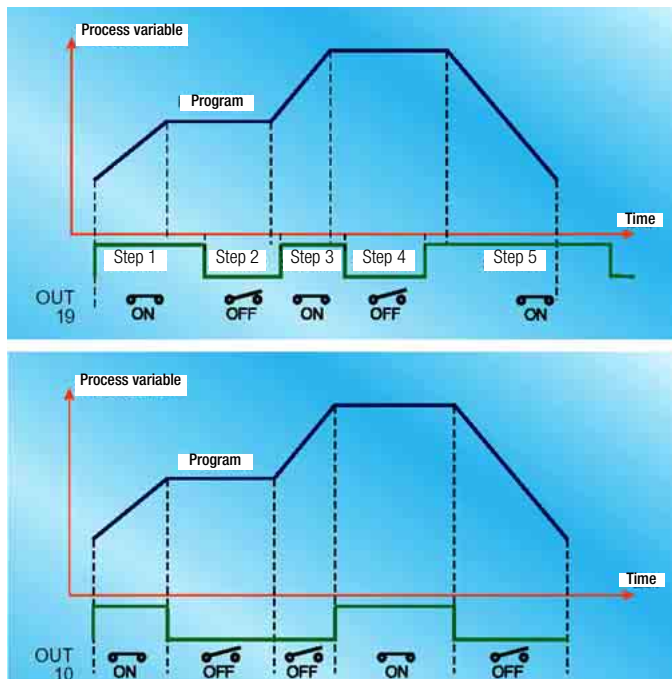
These devices allow for the creation of programs with different numbers of segments. 4 individual programs have been created in the example.



Combined Programs



Time-Controlled Events



8 Technical Data

Auxiliary Voltage

Nominal Value	Nominal Range of Use	
Voltage		Frequency
100 / 240 V AC	From +10 to -15% of the nominal value	50/60 Hz
24 V AC/DC (optional)	+10% of the nominal value	

Additional Power Supply (optional)

Type 24 V_{DC} ± 20%, non-isolated, max. 25 mA

Power Consumption Max. 16 VA without programmer
Max. 20 VA with programmer

Insulation

Double or reinforced insulation is assured between the input of the power supply and the device's inputs and outputs.

Test voltage 2300 V RMS per EN 61010-1

Installation category CAT II

Suppression Common mode: > 120 dB at 50/60 Hz
Series mode: > 60 dB at 50/60 Hz

Electromagnetic Compatibility and Safety Regulations

This device bears the CE mark and is in compliance with requirements set forth in EU directive 89/336 (reference standards for harmonization, EN 50081-2 and EN 50082-2), as well as EU directives 73/23 and 93/68 (reference standard for harmonization, EN 61010-1).

Data Interface

Type	Isolated RS 485
Protocols	MODBUS, JBUS
Speed	Programmable from 600 to 19,200 baud
Configuration	8 bit
Parity	Programmable: even, odd or none
Stop bits	One
Addresses	From 1 to 255
Output levels	Per EIA standard

Display

Resolution 30,000 counts
Accuracy ± 0.2% of the scale range value at 25° C and nominal operating voltage

Ambient Conditions

Relative humidity 20 to 85%, no condensation allowed
Ambient temperature Nominal range of use: 0 to + 50° C
Storage: -20 to + 70° C

Temperature Drift

in ppm per °C of the control range width
mV and TC inputs (except C and J) < 200 ppm / °C, ranges: 3, 4, 7, 18, 19, 22
TC inputs < 250 ppm / °C, ranges: 1, 2, 5, 6, 8, 9, 10, 14, 16, 17, 20, 21, 23, 24, 25, 29
< 350 ppm / °C, ranges: 11, 12, 13, 26, 27, 28
mA and V inputs < 300 ppm / °C
RTD inputs < 500 ppm / °C

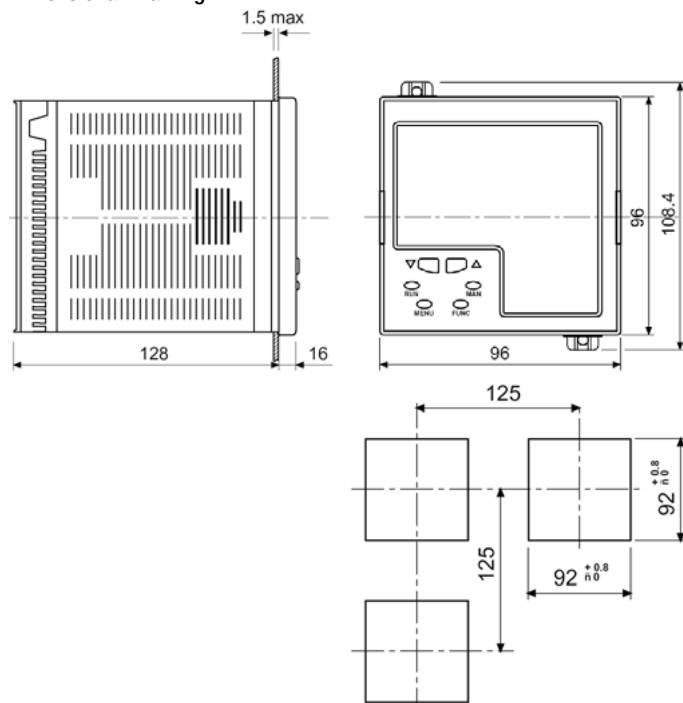
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Universal Controller, 96 x 96 mm

Mechanical Design

Type	Panel-mount device per DIN 43700 Black polycarbonate housing Self-extinguishing per UL 746 C V0
Panel cutout	92 +0.8 mm x 92 +0.8 mm
Mounting position	Front panel vertical
Rear terminal block	32 screw terminals (M3 screws for wire cross-sections from 0.25 to 2.5 square mm) 54 screw terminals for program controller with wiring diagram and safety cover
Protection	In closed areas with installed seal: IP 65 and NEMA 4X, per IEC 529, CEI 70-1 and NEMA 250-1991
Weight	600 g without programmer, 700 g with programmer
Dimensions	96 x 96 mm, 128 mm deep, per DIN 43700

Dimensional Drawing



9 Standard Equipment

- Controller
- Seal
- 2 mounting components
- Operating instructions (per order information)

10 Order Information

Designation	Article No./Feature	
R0550 universal digital controller, 96 x 96 mm with triple LED display and 2 LED bar graph displays, front panel dimensions of 96 x 96 mm, freely configurable	R0550	
Programmer	without	A0 -
	with	- A1
Measurement input	Universal (RTD, TC, linear)	B1 -
	Universal with heating circuit monitoring	B2 -
	Universal, external setpoint, logic inputs	B3 -
		- B4
Outputs 1 and 2	Universal, external setpoint, heating circuit monitoring, logic inputs	B5 -
	-	B6 -
	2 relay outputs	C1 C1
	2 Triac outputs	C2 C2
Outputs 3 and 4	1 logic and 1 relay output	C3 C3
	2 logic outputs	C4 C4
	None	D1 -
	2 relay outputs (alarms)	D2 -
		- D3
Outputs 5 and 6	2 relay outputs (servo output)	D4 -
	-	D5 -
	None	E1 E1
	2 outputs, 5 and 6 (mA)	E2 E2
Options	1 output, 5 (mA)	E3 E3
	None	F0 F0
	RS 485	F1 -
	Transmitter power supply	F2 F2
	RS 485, transmitter power supply	F3 F3
	Real-time clock, RS 485, transmitter power supply	- F4
	Real-time clock, transmitter power supply	- F5
	RS 485, transmitter power supply, 4 logic and 5 digital outputs	- F6
	RS 485, transmitter power supply, 8 logic and 10 digital outputs	- F7
	Real-time clock, RS 485, transmitter power supply, 4 logic inputs and 5 digital outputs	- F8
Real-time clock, RS 485, transmitter power supply, 8 logic inputs and 10 digital outputs	- F9	
Auxiliary voltage	100 / 240 V AC	G1 G1
	24 V AC/DC	G2 G2
Operating instructions	German	H0 H0
	English	H1 H1
	French	H2 H2
	Italian	H3 H3

The SC550 configuration software is included in the standard equipment or can be downloaded free of charge from our website www.gmc-instruments.com

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