Universal Programmable Controller RT1800

- **5 DIN sizes**
- **Two 4-digit displays plus bargraph**
- **Universal programmable input**
- **Optional remote set-point input**
- **PID-fuzzy auto-tuning with bumpless Auto/Manual**
- **Up to 4 relays and analog control output**
- **Retransmission analog output available**
- **Triple isolation**
- **RAMP/SOAK function**
- **2-program-with-up-to-8-point pattern set point available**
- **Serial interface available**

RT1800 is a microprocessor-based controller with universal input, analog output, and up to 4 relays (control or alarm) that may be controlled through a number of algorithms such as ON/OFF, ON/OFF heating/cooling duplex, motor-valve control, PID, and self-tuning PID. A bumpless auto-manual change-over is built in the PID algorithm. A start-on timer allows one of output relays to be time-controlled. Two displays (for the measured value and for the set point) as well as an output-control bargraph ease operator duties. Carefully protected from electromagnetic disturbances by featuring both input and output optical isolation, RT1800 is well equipped for trouble-free operation in harsh industrial conditions.

Technical specifications

Main input	*(programmable)* [1]
Pt100 (w=1.385, 1.391); 3-wire	-199.9...600.0 °C [6]
Thermocouple "B"	0...1820 °C [1]
Thermocouple "E"	0...1000 °C [2]
Thermocouple "J"	0...400.0(1200) °C [6]
Thermocouple "K"	0...400.0(1200) °C [6]
Thermocouple "L"	0...800 °C [2]
Thermocouple "N"	0...1300 °C [2]
Thermocouple "R"	0...1769 °C [2]
Thermocouple "S"	0...1769 °C [2]
Thermocouple "T"	-199.9...400.0 °C [3]
Thermocouple "U"	-199.9...600.0 °C [3]
Thermocouple "D"	0...2320 °C [2]
Linear voltage -10...50 mV	-1999...9999, programmable [4]
Linear current 0(4)...20 mA	-1999...9999, programmable [2]
Input type/range selection	programmable
Input isolation	optical, 1500 VAC
Auxiliary input [2] *(option)*	
Signal type	0(4)...20 mA
Function	remote set point
Control outputs	*(up to 2 outputs* [3]*)*
Relay electromechanical	3A/250V w/ NO/NC [4] contact
Solid state relay [5]	1A/250VAC
MOS gate	0.1A/60V, optically isolated
Output for external SSR	24 V, 20 mA
Analog output [6]	0(4)...20 mA (≤ 600 Ω), 0...10 V (≥ 1 MΩ)
Isolation	optical, 1500 VAC
Control algorithms	ON/OFF and PID-fuzzy, programmable
Auto-tuning	programmable
Auto/Manual control	bumpless, keyboard switched [7]
Pattern set point	1(2) programs w/ 16(8) points
Alarm outputs	*(up to 2 outputs* [3]*)*
Relay electromechanical	3A/250V w/ NO/NC [4] contact
Solid state relay [5]	1A/250VAC
MOS gate	0.1A/60V, optically isolated
Output for external SSR	24 V, 20 mA
Retransmission output [8] *(option)*	
Signal type	0(4)...20 mA (≤ 600 Ω), 0...10 V (≥ 1 MΩ)
Function	PV or SV transmission
Isolation	optical, 1500 VAC

Serial interface [9]	
Interface type	RS232 or RS485
Function	configuration and networking
Network devices	up to 31
Isolation	1500 VAC
Protocol	MODEBUS ASCII or RTU
Accuracy	
Measurement error	0.3% from span
Temperature drift	0.01% from span for 1 °C
Sample time	250 ms
Cold junction compensation	automatic software
RTD line compensation	automatic software
Power supply	
Supply voltage	85…265 VAC
Consumption	max. 4 VA
Indication and controls	
Digital display	2 x 4 LED indicators
Bargraph display [7]	10-point LED for 1st control output, 0...100%
LEDs	8 (6 for 'S') control LEDs
Keyboard	5 (4 for 'S') membrane keys
Operating conditions	
Operating temperature	0...50 °C
Operating humidity	20...85 %RH
Storage temperature	-20...65 °C
Storage humidity	0...95 %RH, non-condensing

Design and materials	'B'	'H' / 'V'	'Q'	'S'
Front dimensions [mm]	96x96	96x48	72x72	48x48
Mounting	panel	panel	panel	panel / rail
Panel cutout [mm]	91x91	91x45	69x69	45x45
Mounting depth [mm]	81	81	81	81
PV display digit height [mm]	14	8	14	8
SV display digit height [mm]	10	8	10	8
Maximum weight [g]	300	225	225	150
Protection, front/terminals	IP56/20	IP56/20	IP56/20	IP56/20
Increased front IP (option)	IP65	IP65	IP65	-
Case material	plastic	plastic	plastic	plastic
Wiring (terminals)	screw	screw	screw	screw

[1] [n] shows the number of sub-ranges that can be selected via the keyboard.
[2] For cases 'B', 'H', 'V' – instead of interface; for case 'Q' – instead of 2nd alarm output; for case 'S' – instead of interface and retransmission analog output
[3] For cases 'B', 'H', 'V' – 2 control + 2 alarm or 1 control + 3 alarm; for case 'Q' – 1 control + 2 alarm or 2 control + 1 alarm; for case 'S' – 2 control + 2 alarm
[4] For cases 'B', 'H', 'V' 2nd control (3rd alarm) relay is NO; for case 'Q' 2nd control (1st alarm) relay is NO; for case 'S' all relays are NO.
[5] Ask for availability!
[6] Instead of control relay!
[7] Not available for case 'S'!
[8] For cases 'H', 'V' – instead of 2nd alarm output; for case 'S' – instead of interface or 1st alarm output.
[9] For cases 'B', 'H', 'V' – instead of auxiliary input; for case 'S' – instead of retransmission or 1st alarm output.

Ordering code RT1800 - G0.G5'G5'.G5"G5"G5".G8.G9'9".G11 - #1.#2.#3

Code	Feature or option	Code values
G0	Case (front size)	**B** - 96x96 mm, **H** - 96x48 mm, **V** - 48x96 mm, **Q** - 72x72 mm, **S** - 48x48 mm
G5'	Relay control output [3]	**X** - none, **C** - relay NO/NC [4], **D** - SSR [5], **J** - for external SSR, **M** - isolated MOS gate
G5"	Relay alarm output [3]	**X** - none, **C** - relay NO/NC [4], **D** - SSR [5], **J** - for external SSR, **M** - isolated MOS gate
G8	Control algorithm	**F** - PID-fuzzy (ON/OFF), **H** - PID-fuzzy plus pattern control
G9'	Serial interface [9]	**X** - none, **A** - RS232, **B** - RS485
G9"	Protocol	**M** - MODEBUS (ASCII), **N** - MODEBUS (RTU)
G11	Analog control output [6]	**X** - none, **E** - 0…20 mA, **F** - 4…20 mA, **K** - 0…10 V
#1	Auxiliary input [2]	**X** - none, **E** - 0…20 mA, **F** - 4…20 mA
#2	Analog retransmission output [8]	**X** - none, **E** - 0…20 mA, **F** - 4…20 mA, **K** - 0…10 V
#3	Increased front protection	**X** - none, **P** - IP65 front protection [7]