QUANTROL

Quantrol LC100 / LC200 / LC300
Universal PID Controller Series

Quantrol – compact, flexible, cost-optimized

Universal analog input
Benefit to you:
Low storage costs –
one type is all you need

Flexible hardware
Benefit to you:
Cost-effective –
optimum adaptation of the
device to your application

Setup tool, USB powered
Benefit to you:
Saves time –
fast configuration on a PC
via powered USB interface

RS 485 Modbus RTU interface
Benefit to you:
Process safety –
monitoring with higher-level
systems

Standard-compliant development
Benefit to you:
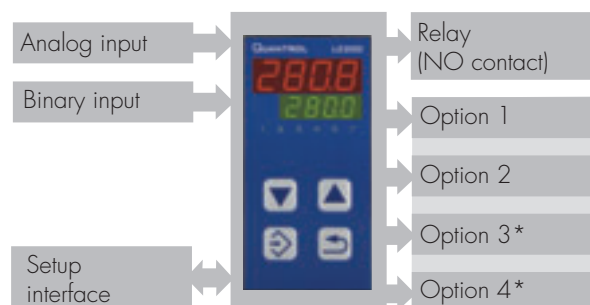Global exporting –
without any problem

Autotuning
Benefits to you:
Saves time –
thanks to simple commissioning
consistent quality –
from good control-action results

Flexible hardware

Device structure

Analog input		Relay (NO contact)
Binary input		Option 1
		Option 2
		Option 3*
Setup interface		Option 4*

* Quantrol LC200 / LC300 version only

Options

1	2	3	4	
x	x	x	x	Relay (NO contact)
x	x	x	x	Logic output
x				Analog output
	x			RS485 interface

The controller is available in different housings. Outputs are individually implemented, in accordance with the order matrix.

Analog input (configurable)

Designation	Standard	Measuring range [1]	Measuring accuracy [2]	Ambient temperature error
Thermocouples (Cold junction: internal Pt100)				
Fe-CuNi „L"		−200 to +900°C	≤0,4%	≤100 ppm / K
Fe-CuNi „J"	EN 60584	−200 to +1200°C	≤0,4%	≤100 ppm / K
Cu-CuNi „T"	EN 60584	−200 to +400°C	≤0,4%	≤100 ppm / K
NiCr-Ni „K"	EN 60584	−200 to +1372°C	≤0,4%	≤100 ppm / K
NiCr-CuNi „E"	EN 60584	−200 to +1000°C	≤0,4%	≤100 ppm / K
NiCrSi-NiSi „N"	EN 60584	−100 to +1300°C	≤0,4%	≤100 ppm / K
Pt10Rh-Pt „S"	EN 60584	−50 to +1768°C	≤0,4%	≤100 ppm / K
Pt13Rh-Pt „R"	EN 60584	−50 to +1768°C	≤0,4%	≤100 ppm / K
RTD temperatur probes				
Pt100 (2 wires, 3 wires)	EN 60751	−200 to +650°C	≤0,4%	≤50 ppm / K
Pt1000 (2 wires, 3 wires)	EN 60751	−200 to +650°C	≤0,4%	≤50 ppm / K
KTY11-6 (2 wires)		−50 to +150°C	≤0,4%	≤50 ppm / K
Cu-50 (3 wires)		−50 to +100°C	≤0,4%	≤50 ppm / K
Standard signals				
Voltage 0 to 10V			≤0,4%	≤100 ppm / K
Current 0(4) to 20mA			≤0,4%	≤100 ppm / K
Binary input	Input for a floating contact			

[1] For thermocouples, the data apply to an ambient temperature of 20°C.

[2] For thermocouples, this includes internal cold junction measuring accuracy. The accuracy applies to the maximum extent of the measuring range.

Binary outputs

Binary outputs	
Relay (NO contact)	Contact rating max. 3A at 230V AC (resistive load)
Logic	0 / 14V, max. 20mA
Analog output (configurable)	
Voltage (option)	0 to 10V, load resistance>600Ω, accuracy<0,5%
Current (option)	0 to 20mA or 4 to 20mA, load resistance<450Ω, accuracy<0,5%

Interfaces

| Interfaces	
Setup interface	USB socket, Mini-B type, 5-pin
RS485 interface	Modbus RTU; 9600 or 19200 baud

Compact PID controller

They are used in two-point and three-point control and to activate control valves or thyristor power units by means of a continuous controller output.

Setup tool, USB powered

Save time, avoid errors, and multiply results by means of convenient device configuration with PC software and power supply via USB. The controller does not have to be connected to the mains power supply for configuration.

Firing curve for pottery kilns
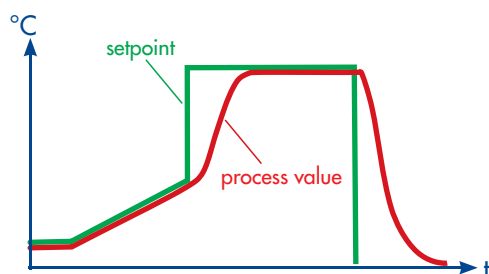
A program curve (profile) for controlled starting and time-dependent firing can be stored for use in small pottery kilns. Parameters such as setpoints, gradients and time are readily accessible.

Other highlights

- sensor monitoring
- up to 5 outputs
- autotuning for accurate PID control
- manual / automatic modes
- configurable limit monitoring (alarms)
- setpoint changeover
- level / keyboard inhibit function
- RS485 Modbus RTU interface
- ramp / timer function
- plug-in controller module
- CE-compliant
- UL approval pending

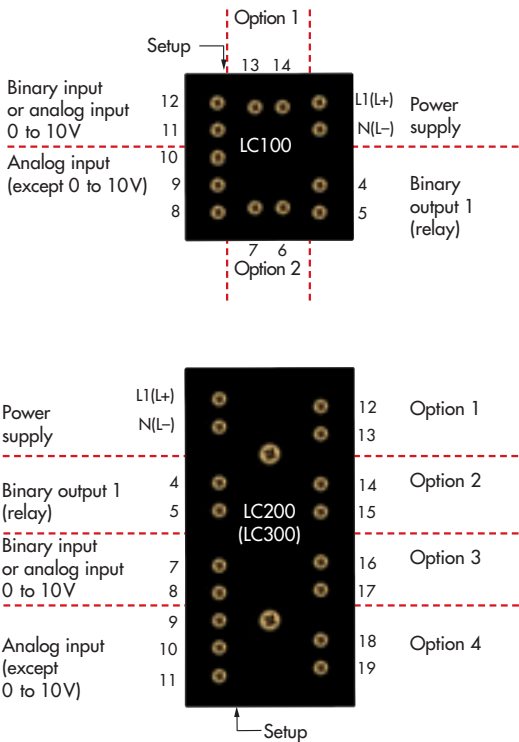| Electrical data	
Power supply (switch-mode PSU)	AC 110 to 240V +10/−15%, 48 to 63Hz or AC/DC 20 to 30V, 48 to 63Hz
Electrical safety	as defined by DIN EN 61010, Part 1; overvoltage category III, pollution degree 2
Power consumption	max. 14VA
Electrical connection	at rear via screw terminals, conductor cross-section to max. 1,5mm^2 (finely stranded with tube-type core ferrules, forked terminal, or pin terminal)
Electromagnetic compatibility – Emitted interference – Interference resistance	DIN EN 61326-1 Class A – for industrial use only to industrial requirements

Housing	
Housing type	plastic housing for panel mounting, as defined by IEC 61554
Dimensions (front panel)	LC100: 48mm x 48mm; LC200: 48mm x 96mm; LC300: 96mm x 96mm
Panel cut-out	LC100: 45mm x 45mm; LC200: 45mm x 92mm; LC300: 92mm x 92mm
Depth behind panel	LC100: max. 95mm; LC200/LC300: max. 80mm
Ambient/storage temperature range	−5 to +55°C / −40 to +70°C
Climatic rating	rel. humidity <90% annual mean, no condensation
Protection	as defined by EN 60529, front IP65, rear IP20

Connection diagram

Setup / Option 1
13 14
Binary input or analog input 0 to 10V — 12, 11
LC100
Analog input (except 0 to 10V) — 10, 9, 8
L1(L+) / N(L−) Power supply
4, 5 Binary output 1 (relay)
7 6 Option 2

Power supply — L1(L+), N(L−)
12 Option 1
13
Binary output 1 (relay) — 4, 5
LC200 (LC300)
14 15 Option 2
Binary input or analog input 0 to 10V — 7, 8
16 17 Option 3
9
Analog input (except 0 to 10V) — 10, 11
18 19 Option 4
Setup

For electrical connection, please comply with the safety instructions in the brief instructions, or operating manual.

		LC100	LC200 / LC300
Analog input 1			
Thermocouple	+ / −	9 / 8	10 / 11
RTD temperature probe (2 wires)		10 / 8	9 / 11
RTD temperature probe (3 wires)		10 / 9 / 8	9 / 10 / 11
Voltage DC 0 to 10V	+ U_x −	12 / 11	7 / 8
Current DC 0(4) to 20mA	+ I_x −	9 / 8	10 / 11
Binary input 1 for a floating contact		11 / 12	7 / 8
Analog output 2 DC 0 to 10V, DC 0/4 to 20mA	+ U_x, I_x −	13 / 14	12 / 13
Binary outputs		1 2 3	1 2 3 4 5
Relay output (NO contact) (max. 3 A at AC 230V, resistive load)		4 13 6 / 5 14 7	4 12 14 16 18 / 5 13 15 17 19
Logic output (DC 0/14V)	+ U_x −	13 7 / 14 6	12 14 16 18 / 13 15 17 19
RS 485 interface	+ RxD/TxD −	7 / 6	14 / 15
Power supply	AC/DC	L1 (L+) / N (L−)	L1 (L+) / N (L−)
Setup interface		USB socket, Mini-B type, 5-pin	

Optional (look at Type coding): Analog output 2, Binary outputs 2 to 5, RS485 interface, Power supply

Order matrix

	Basic type
702021	Quantrol LC100 (48 mm x 48 mm format))
702022	Quantrol LC200 (48 mm x 96 mm, portrait format)
702024	Quantrol LC300 (96 mm x 96 mm format)
	All types incl. 1 analog input (universal), 1 binary input (for floating contact; alternative to analog input DC 0 to 10V), 1 relay output (NO contact)

	Basic type extension
8	Standard, with factory settings
9	Programming to customer specification (on request)

1	2	3	4	Options (no 3 and 4 with LC100)
0	0	0	0	–
1	1	1	1	1 relay output (NO contact)
2	2	2	2	1 logic output
3	–	–	–	1 analog output (configurable)
–	4	–	–	1 RS485 interface

	Power supply
23	110 to 240V AC, +10/−15%, 48 to 63Hz
25	20 to 30V AC/DC , 48 to 63Hz

702024 / 8 - 3 4 1 2 - 23   Example