

- **PID controller with 'one shot' auto-tune**
  - single loop, heat/cool and ramp/soak as standard
- **Quick code, front face or PC configuration**
  - easy commissioning and operation using our Windows™-based software
- **Selectable control outputs to suit application**
  - analog, relay or logic control capabilities as standard
- **Case depth behind panel less than 125mm**
  - reduced installation and panel costs
- **Accurate universal process input with integral transmitter power supply**
  - direct connection for any process signal
- **NEMA4X/IP66 protection and full noise + EMC immunity**
  - reliability in the harshest environments
- **RS485/Modbus serial communications**
  - SCADA, PLC and open systems integration



**C250 – the most comprehensive  
1/4 DIN controller,  
straight out of the box**

**ABB**

## C250

The C250 Process controller is a highly versatile, single loop controller in 1/4 DIN format that has been designed to be exceptionally easy to set up and operate.

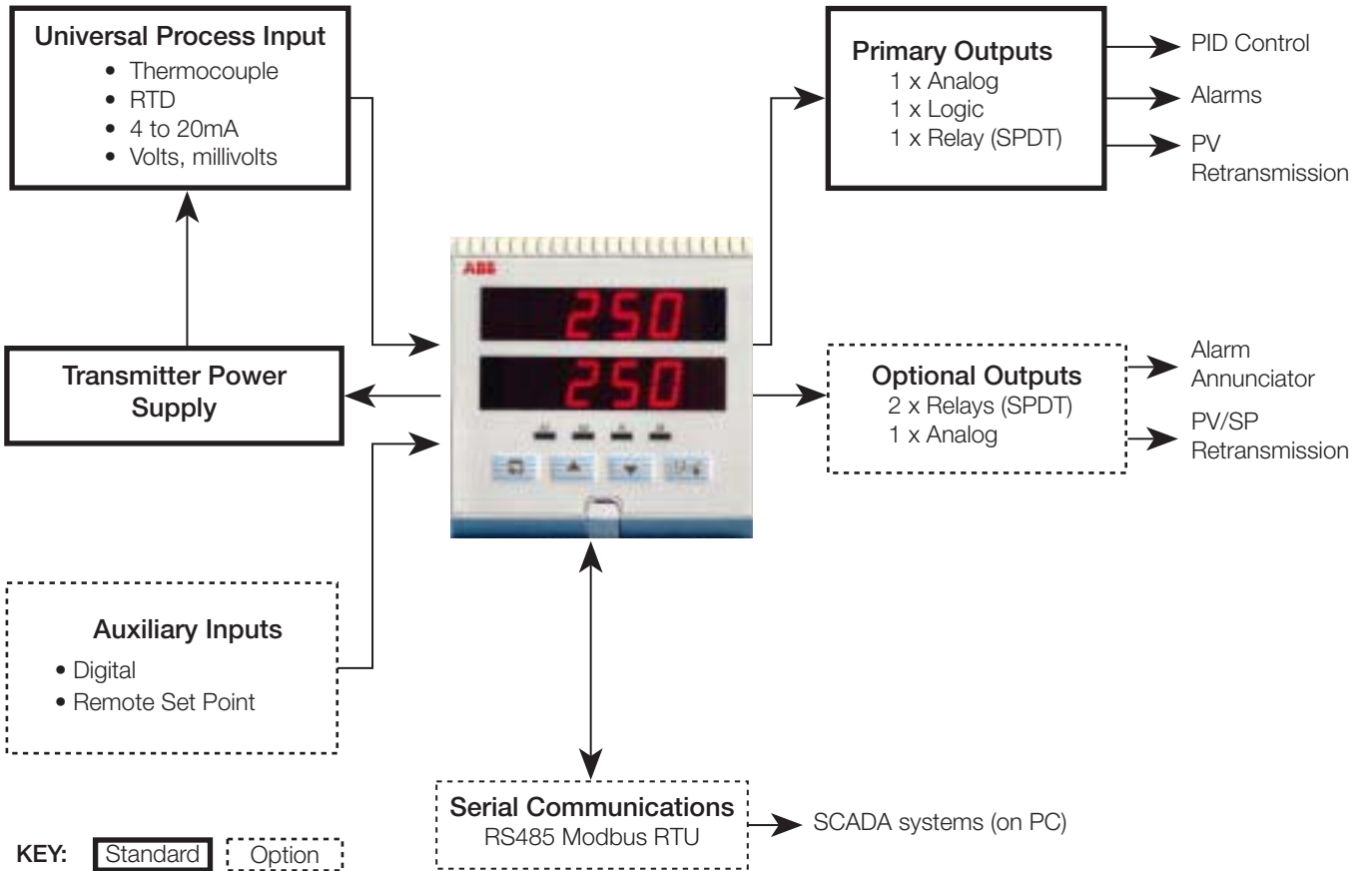
Universal input and an integral transmitter power supply ensure that the C250 has the capabilities to measure a wide range of process signals such as temperature, pressure, flow and level.

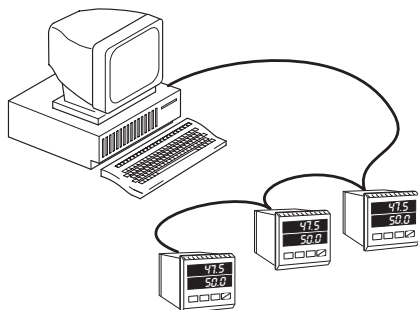
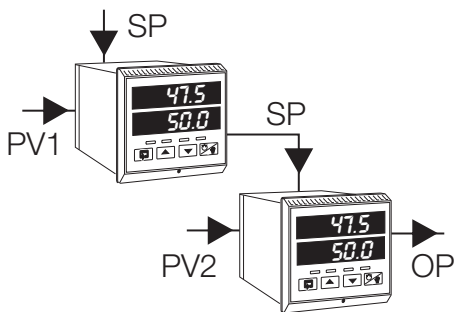
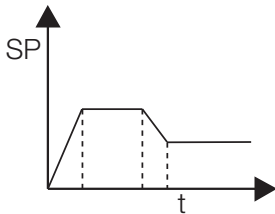
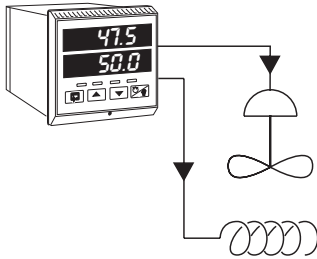
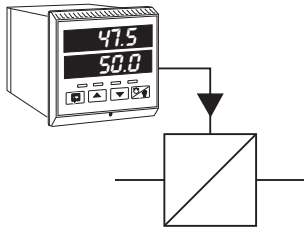
Enhanced performance with analog, logic and relay control outputs, all fitted as standard, with the option to add further I/O capabilities such as additional relays, remote set point, analog retransmission and digital input, to suit your application.

The configuration of the C250 is achieved by moving the security switch and entering a simple code from the front panel keys or via our PC configuration package. No passwords, no input links, no complications.

With NEMA4X/IP66 front panel and superior RF immunity as standard the C250 has been designed to control reliably in the harshest of today's industrial environments.







### PID Control

Simple PID control is available using any of the unit's three built-in outputs.

- 4 to 20mA analog output
- Logic 18V time proportioning (to drive solid state relays)
- 5A relay for time proportioning or on/off control

Universal input with direct connection of sensors and built-in transmitter supply. Optional isolated retransmission for input to recorders.

### Heat/Cool

Heat/Cool control strategies may be implemented on the standard C250, using a combination of the analog, logic and relay outputs.

### Ramp/Soak Set Point Profiles

The ramp/soak facility available on every C250 provides for a single program, four-segment profile. This facility also includes guaranteed ramp/soak, repeat program, skip and reset. An optional digital input can initiate start/stop of the ramp/soak cycle.

### Master/Slave and Cascade

Two or more C250s can be used in either a master/slave or cascade configuration, with the addition of the remote set point option to the basic unit.

### RS485/Modbus

Fitted with an optional RS485 serial communication board, the C250 can communicate with PLCs and SCADA systems using the Modbus protocol.

## Specification

### Summary

P, PI, PID single loop controller  
Autotune facility  
Fully user configurable  
NEMA4X/IP66  
PC Configuration

### Operation

#### Display

High-intensity 7-segment, 2 x 4-digit red LED display  
Display range -999 to +9999  
Display resolution  $\pm 1$  digit  
Display height 12mm (0.43 in.)

#### Configuration

User defined via front panel or PC configurator

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## Standard Functions

### Control types

Programmable for manual, on/off, time proportioning, current proportioning and heat/cool control.

### Set points

Local  
Remote  
4 selectable, fixed value  
Ramping set point

### Profile controller

Number 4 ramp/soak segments  
Features Guaranteed ramp/soak, self seeking set point, program repeat  
Controls Run, hold and stop from front panel switches  
Run/hold or run/stop from digital input

### Alarms

Number Two user-defined  
Type High/Low process  
High/Low deviation  
Loop break alarm

## Standard Build

### Control output/retransmission

Analog, configurable in the range of 4 to 20mA  
Max. load 15V (750 $\Omega$  at 20mA)  
Accuracy  $\leq 0.25\%$  of span  
Isolation 500V DC from input (not isolated from logic output)

### Logic output

18V DC at 20mA  
Min. load 400 $\Omega$   
Isolation 500V DC from input (not isolated from control output)

### Relay output

One relay as standard (SPDT) 5A @ 115/230V AC



## ...Specification

### Analog Input

#### Number

One as standard

One optional 4 to 20mA remote set point input

#### Input sampling rate

250ms per channel

#### Type

Universally configurable to provide (Channel 1 only):

Thermocouple (THC)

Resistance Thermometer (RTD)

Millivolt

Current

DC voltage

#### Input impedance

mA 100 $\Omega$

mV, V >10M $\Omega$

#### Linearizer functions

Programmable for standard inputs:

$\sqrt{\quad}$ , THC types B, E, J, K, N, R, S, T or Pt100

#### Broken sensor protection

Upscale drive on THC and RTD

Downscale drive on milliamps and voltage

#### Cold junction compensation

Automatic CJC incorporated as standard

Stability < 0.05 $^{\circ}$ C/ $^{\circ}$ C change in ambient temperature

#### Input protection

Common mode isolation >120dB at 50/60Hz with 300 $\Omega$   
imbalance

Series mode rejection > 60dB 50/60Hz

#### Transmitter power supply

24V, 30mA max. powers one 2-wire transmitter





## ...Specification

### Options

One option board can be installed from:

- Type 1 One relay
- Type 2 Two relays + one digital input + remote set point
- Type 3 One relay + one digital input + remote set point + Modbus serial communications
- Type 4 One relay + one digital input + remote set point + retransmission

### Relay output

SPDT 5A @ 115/230V AC

### Digital input

Type Volt-free  
Minimum pulse 250ms

### Modbus serial communications

Connections RS422/485, 2- or 4-wire  
Speed 2.4k or 9.6k baud rate  
Protocol Modbus RTU slave

### Remote Set Point Input

4 to 20 mA DC, 100Ω nominal input impedance  
Preset to process variable engineering units

### Auxiliary Analog Output

Analog, configurable in the range of 4 to 20mA  
Max. load 15V (750Ω at 20mA)  
Isolation 500V DC from input

### Physical

#### Size

96 wide x 96 high x 122.5mm  
(3.78 in. wide x 3.78 in. high x 4.82 in. deep)

#### Weight

520g (1.1 lb) approx.

### Electrical

#### Voltage

85 to 265V AC (50/60Hz)  
24V DC

#### Power consumption

<6VA

#### Power interruption protection

<60ms/<3 cycles, no effect  
>60ms/>3 cycles, instrument returns to operation after a controlled reset

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### Environmental

#### Operating limits

0 to 55°C (32 to 131°F)  
5 to 95%RH non-condensing

#### Temperature stability

<0.02% of reading or 2μV/°C (1μV/°F)

#### Front face

IP66 (NEMA4X), rear IP20

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### EMC

#### Emissions

Meets requirements of EN50081-2

#### Immunity

Meets requirements of EN50082-2

#### Design and manufacturing standards

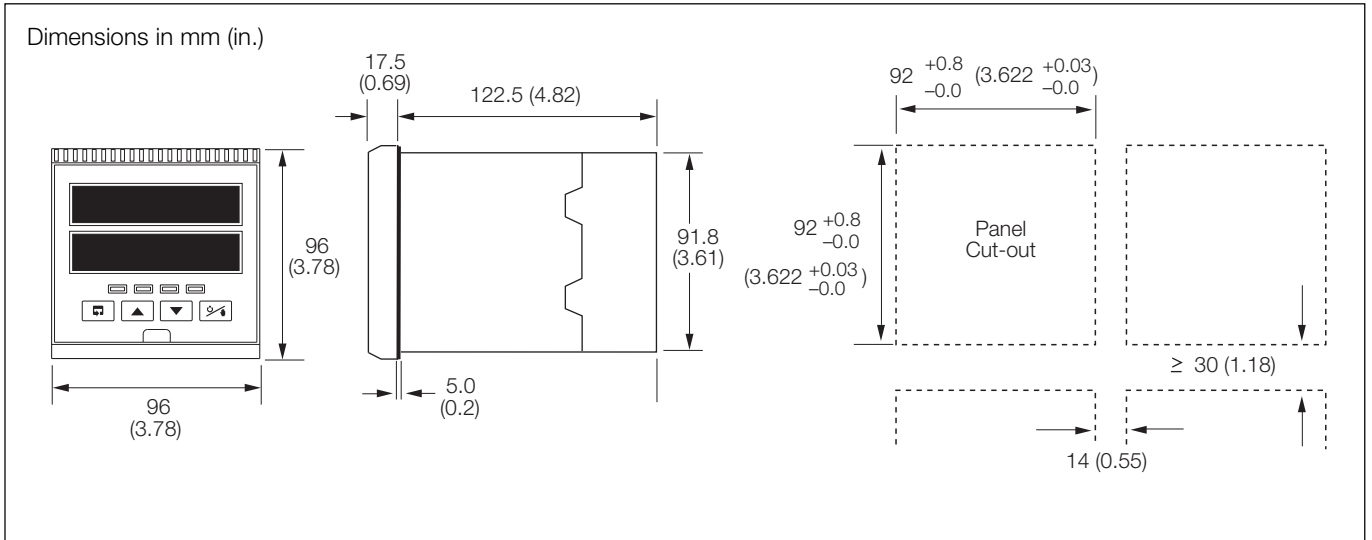
CE Mark

#### Safety standards

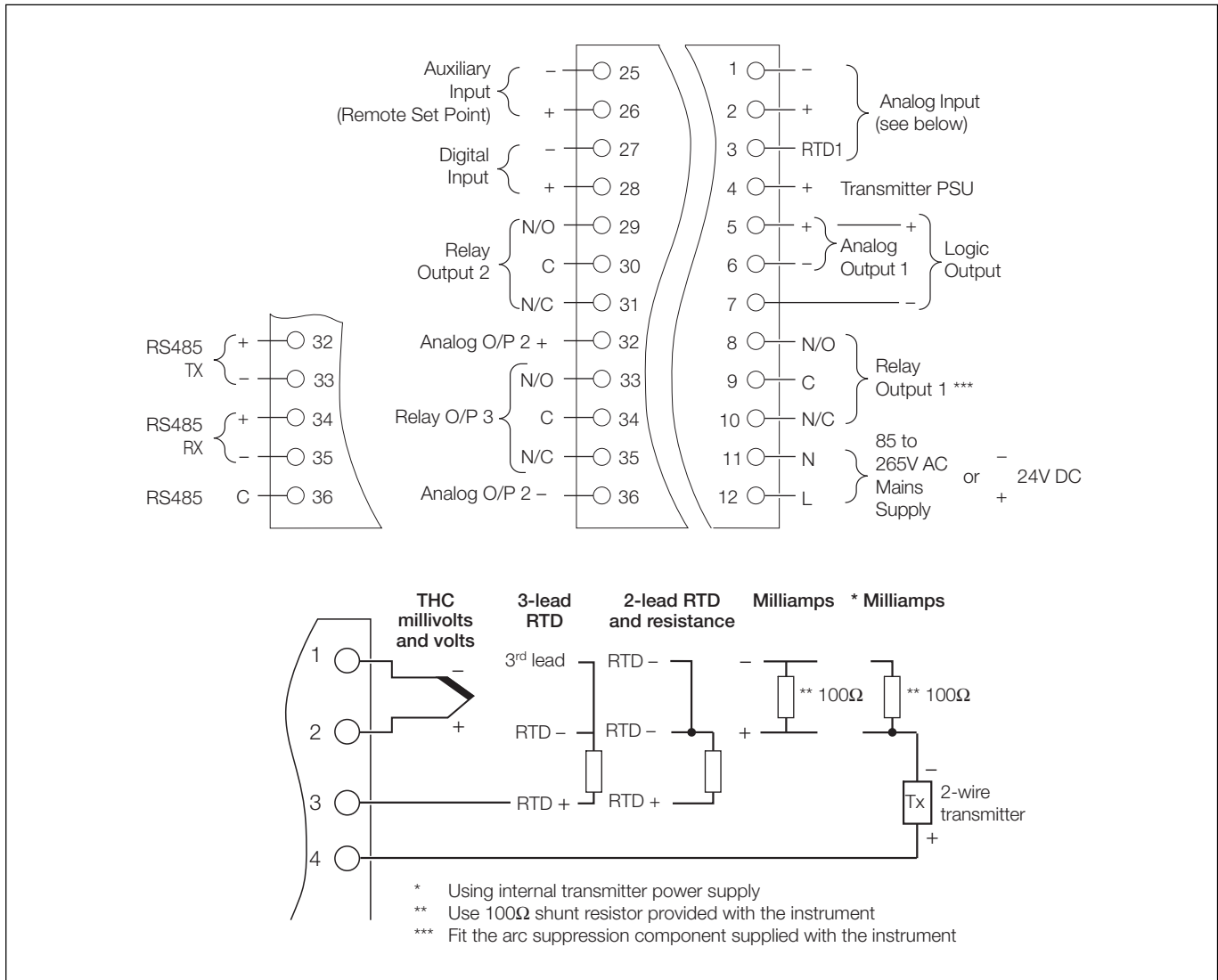
EN61010 – 1  
UL 310 – 1  
FM 3810



### Overall Dimensions



### Electrical Connections



### Ordering Information

C250 1/4 DIN Process Controller*	C250 /	X X	X	X /	X X X X
<b>Option Board</b>					
None		0 0			
1 additional relay		0 1			
2 additional relays + 1 digital input + remote set point 4 to 20mA		0 2			
1 additional relay + 1 digital input + remote set point + RS485/Modbus		0 3			
1 relay + 1 digital input + remote set point + retransmission		0 4			
<b>Power Supply</b>					
85V to 265V AC			0		
24V DC			1		
<b>Build</b>					
ABB Standard			0		
CSA approval (pending)			1		
UL approval			2		
FM approval			4		
<b>Programming/Special Features</b>					
Configured to factory standard				S	T D
Configured to customer requirements				C	U S
Special features				S	P X X

\* As standard the C250 is fitted with one relay, analog output, logic output, universal input and transmitter power supply

### Accessories

PC Configurator Kit (part no. C100/0700)

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