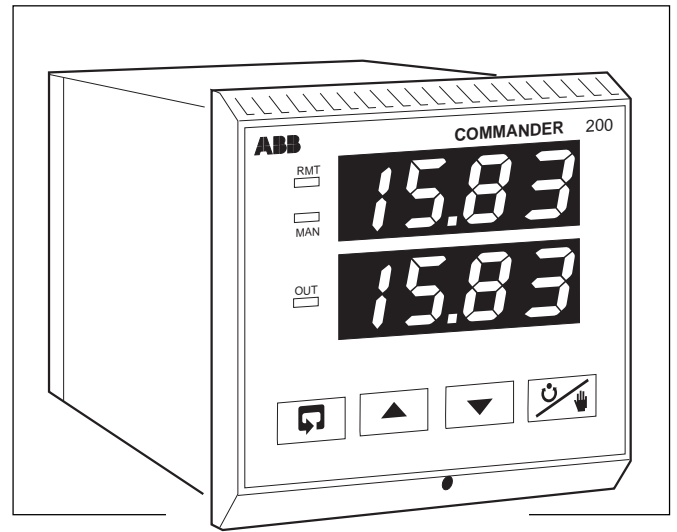


## *Specification DataFile*

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- **Single loop PID control with autotune**
  - easily setup for dependable operation
- **Universal input with 0.1% accuracy**
  - user programmable for any process signal
- **Analog, relay or logic control output**
  - full choice to match your application needs
- **5 program, 15 segment Ramp/soak**
  - with self-seeking set point
- **Alarm relay and retransmission options**
  - additional outputs for improved process monitoring
- **IP66/NEMA 4X protection and full noise immunity**
  - reliability in the harshest environments
- **RS485 MODBUS serial communications**
  - SCADA, PLC and open systems integration



*COMMANDER 200 –  
the compact 1/4 DIN controller  
with the functions you choose  
to match your process*

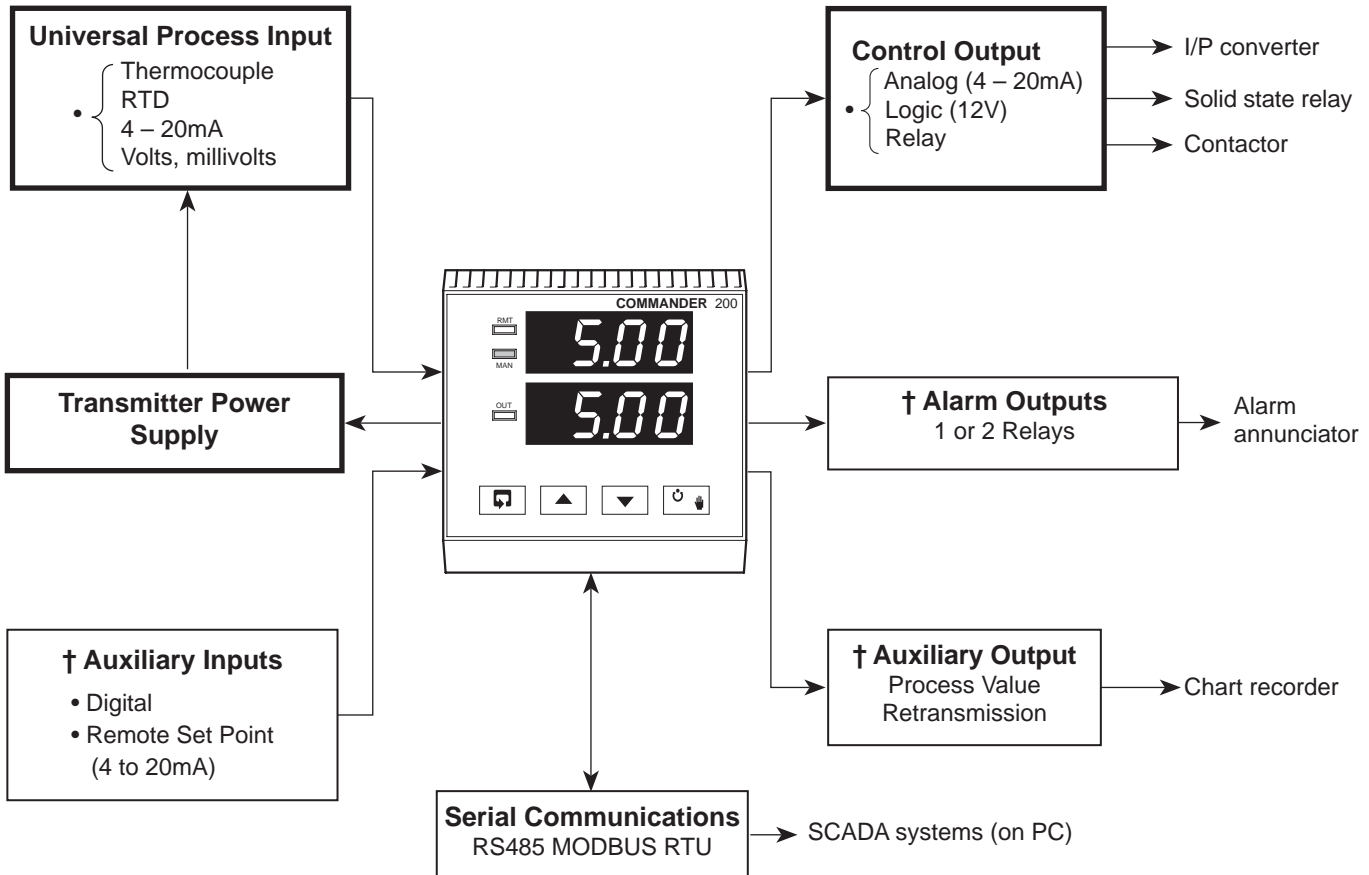
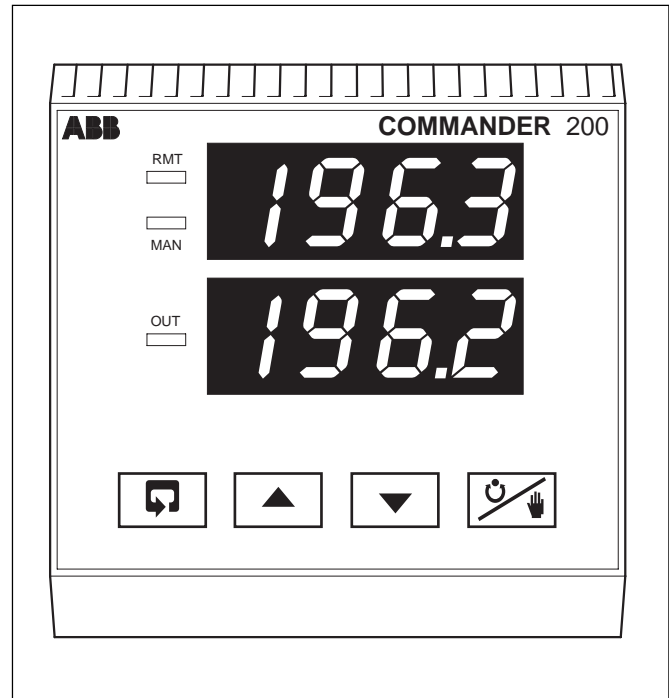
## COMMANDER 200

The COMMANDER 200 is a robust and dependable  $\frac{1}{4}$  DIN single-loop PID controller. It is designed to display and control any process variable such as temperature, pressure, level or flow.

The **universal process input** is configured by the user to suit the thermocouple, RTD or dc signal from the sensor. The choice of **control output** type, which is specified at the time of order, makes the COMMANDER 200 suitable for a wide range of single loop control applications.

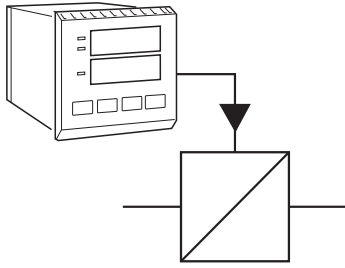
The standard model (C201) incorporates an **autotune** facility for automatic evaluation of the optimum PID values for the application. Advanced versions of the product are available with ramp/soak profiling capability (C202) or flow totalizing facilities (C203).

All versions provide IP66/NEMA 4X water/dust protection on the front face



KEY: Standard Option

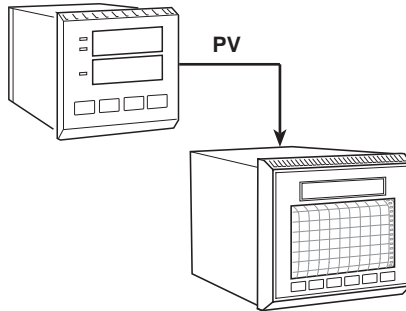
† See I/O option in Ordering Guide page 7



## PID Control

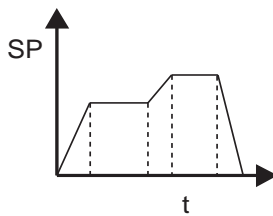
The control output on the COMMANDER 200 is selected at the time of ordering from a choice of three options:

- Relay – 5A time-proportioning for contactor operation
- Logic – 12V d.c. time-proportioning to drive solid state relays (SSRs)
- Analog – 0 to 20mA/4 to 20mA for use with i/p converters and SSRs.



## Process Value Retransmission

The COMMANDER 200 may be fitted with an optional 4 to 20mA auxiliary output for retransmission of process value to a chart recorder.



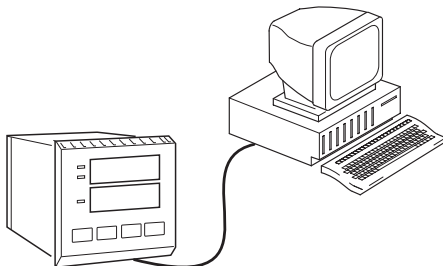
## Ramp/Soak Program Option (C202)

The C202 version of the COMMANDER 200 provides the facility for five user-defined set point profiles with a total of 15 segments. Segment events may be incorporated into the ramp/soak program to allow relays to be activated at predetermined points during the profile.



## Totalizer Option (C203)

The Totalizer version (C203) uses both displays to indicate a totalized value of up to seven digits. Preset values, count direction and reset controls are all user programmable.



## Serial Communications

Fitted with an optional RS485 serial communications board, the COMMANDER 200 can communicate with PLCs and SCADA systems using Modbus protocol.

## Specification

### Summary

COMMANDER 200 1/4DIN PID single loop controller

Autotune facility

Fully user configurable

IP66 (NEMA 4X) front face

### Operation

#### Display

High-intensity 7-segment, 0.56" (14mm) 2 x 4 digit red LED display

#### Configuration

User defined via front panel

### Analog Inputs

#### Number

One universal process input  
Optional 4 to 20mA remote set point input

#### Input sampling rate

250ms

#### Type

##### Process variable input

Universally configurable for  
Thermocouple (THC)  
Resistance thermometer (RTD)  
Millivolt  
Current  
D.C. voltage

##### Remote Set Point Input

4 to 20mA

#### Input impedance

Millivolt 10M $\Omega$  minimum  
Volt 10M $\Omega$  minimum  
Current 100 $\Omega$  nominal

#### Linearizer functions

Sqrt, THC types B, E, J, K, R, S, T, N or Pt100

### Broken sensor protection

Upscale

### Cold junction compensation

#### Temperature Limits

THC/RTD type	°C		°F	
	min.	max.	min.	max.
Per NBS125 & IEC584				
Type B	-18	1800	0	3272
Type E	-100	900	-148	1652
Type J	-100	900	-148	1652
Type K	-100	1300	-148	2372
Type N	-200	1300	-328	2372
Type R & S	-18	1700	0	3092
Type T	-250	300	418	572
RTD per DIN43760 & IEC751	-200	600	-328	1112

#### Notes

Performance accuracy is not guaranteed below 400°C (752°F) for types B, R and S thermocouples  
RTD, 3-wire platinum, 100 $\Omega$ , with range of 0 to 400 $\Omega$

Min. span below zero      Type T    70°C (126°F)  
   Type N    105°C (189°F)

### Electrical Limits

Input type	Min. value	Max. value	Min. span
Millivolts	0	150	10
Volts	0	5	0.1
Milliamps	4	20	1

Automatic CJC incorporated as standard

### Input noise rejection

Common mode isolation >140dB at 50/60Hz with 500 $\Omega$  imbalance

Series mode rejection >60dB at 50/60Hz

### Accuracy

Measurement error      < $\pm 0.1\%$  of reading or  $\pm 20\mu\text{V}$  (volts, millivolts and current)  
    $\pm 1.0^\circ\text{C}$  ( $\pm 1.8^\circ\text{F}$ ) RTD  
    $\pm 1.5^\circ\text{C}$  ( $\pm 2.7^\circ\text{F}$ ) THC types J, K, E, T, N  
    $\pm 2.0^\circ\text{C}$  ( $\pm 3.6^\circ\text{F}$ ) THC types R, S, B  
Display range              -999 to +9999  
CJC accuracy              <0.05°C/°C change in ambient temperature

### Process input isolation

500V d.c. (channel to ground)

---

## Transmitter power supply

Isolated 24V d.c. supply for one 2-wire transmitter loop on process variable input

---

## Outputs

### Control output

#### Either

Relay, SPST 5A at 120/240V a.c. normally open or normally closed (On/Off or time-proportioning)

#### Or

Analog, configurable in the range of 4 to 20mA

Max. load 15V (750Ω at 20mA)

Accuracy  $\leq 0.25\%$  of span

#### Or

Logic, (12V) on/off or time proportioning for control of solid state relays.

Max. load 400Ω

### Alarm relays

Up to two additional relays can be used for alarms, ramp/soak or totalizer function

SPST 5A 120/240V a.c. normally open or normally closed dry contact

---

## Options

One option board only can be installed – see ordering guide page 7

### Remote set point input (Ratio/Bias Input)

4 to 20mA d.c. 100Ω nominal input impedance

Scalable in engineering units –999 to 9999

### Digital input

Dry contact or TTL level

### Retransmission (Chart Recorder Output)

Max. load 15V (750Ω at 20mA)

Accuracy  $\leq 0.25\%$  of span

### RS485 four-wire serial communications

Connections – RS485, 2 or 4-wire, 1.2k to 9.6k baud rate

Protocol – MODBUS RTU      code option 5

                  ANSI (slave)      code option 4

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## Ramp/Soak Totalizer

### Profile version (C202)

Max. no. of programs 5

with up to 15 ramp/soak segments per program

### Totalizer version (C203)

7-digit, pre-determined and secure totals

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## Electrical

### Voltage

115V  $\pm 15\%$ , 230V  $\pm 15\%$  (50/60Hz) (link selectable)

24V a.c.

### Power consumption

<10VA

### Power interruption protection

<60ms/<3 cycles, no effect

>60ms/>3 cycles, controlled reset

### Line interference

Meets IEC801 Pt. IV level 3 (>2kV spikes)

### Electrical safety

CE marked instruments meet EU regulations

CSA approved

UL approved

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## Environmental

### Operating limits

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

### Temperature stability

<0.02% of reading or 1μV/°C (0.5μV/°F)

### Housing dust/water protection

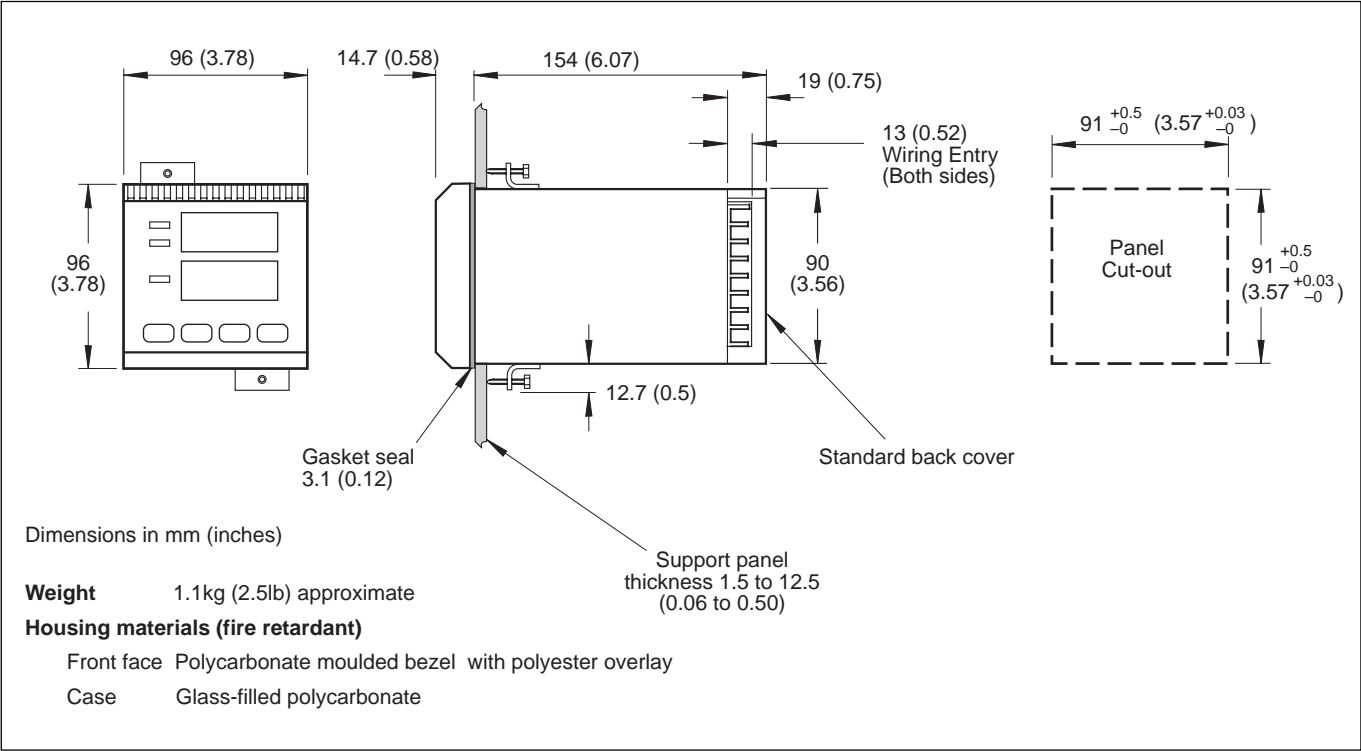
IP66 (NEMA 4X)

### RF protection

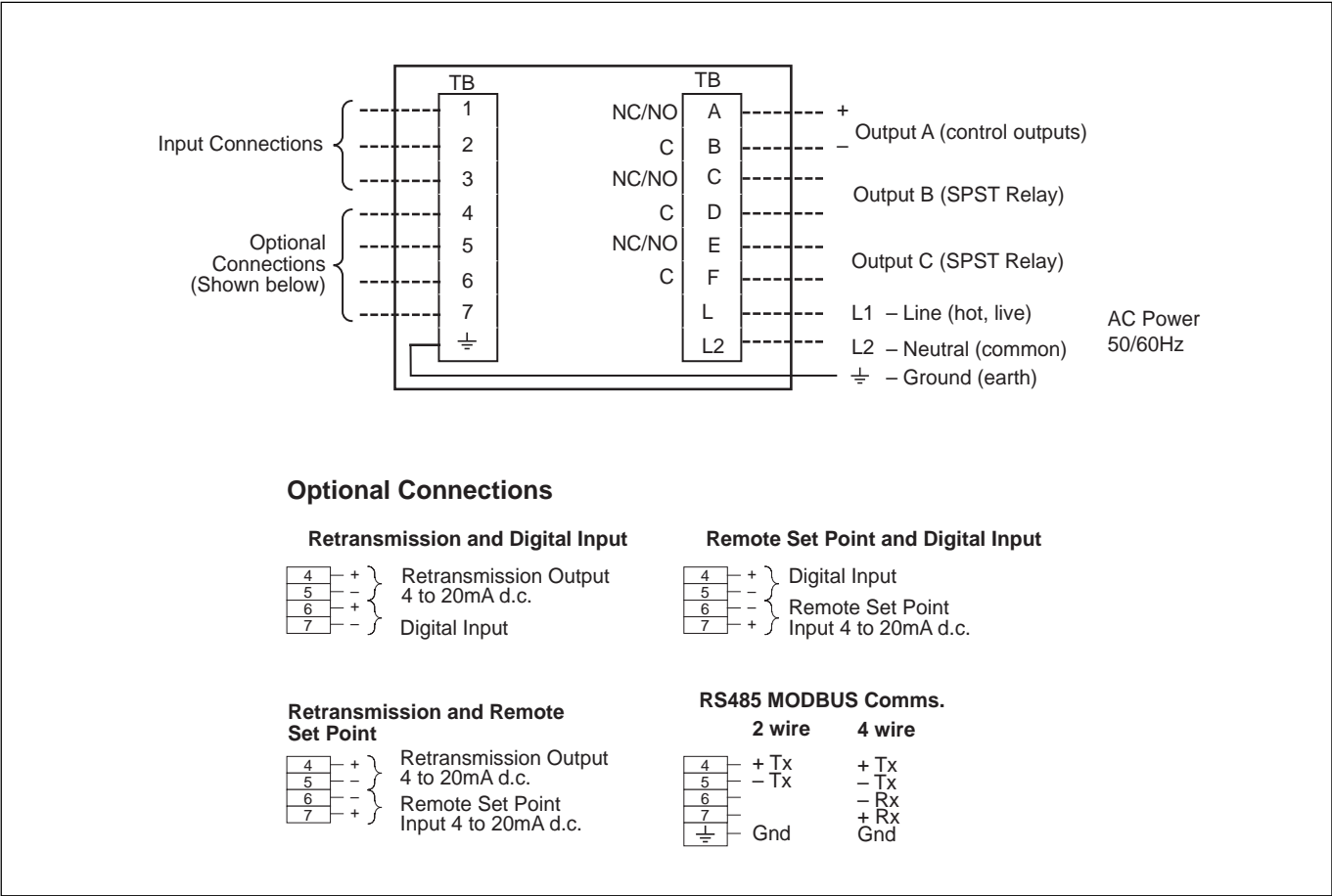
Meets IEC 801 Pt. III level 3

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Dimensions



Wiring Connections



## Ordering Guide

COMMANDER 200 Controller		C20	X	X	X	X	X	0	1	X	X	X	X
PID Controller		1											
PID Controller with Ramp/Soak		2											
PID Controller with Totalizer		3											
Build	Standard		A										
	CSA Approved		B										
	UL Approved		C										
Control Output	SPST Relay			1									
	Logic			2									
	Analog (4–20mA)			3									
Alarm Relays	None				0								
	1 SPST Relay				1								
	2 SPST Relays				2								
I/O Options	None					0							
	Retransmission and digital input					1							
	Remote set point and digital input					2							
	Retransmission and remote set point					3							
	RS485 Serial Communications (ANSI)					4							
	RS485 Serial Communications (MODBUS)					5							
Firmware Version	Version 1						0	1					
Power Supply	115V a.c. (excl. USA)									P			
	115V a.c. (USA only)									U			
	230V a.c.									R			
	24V a.c.									T			
Configuration	Company Standard										S	T	D
	Customer Setting										C	U	S
	Special										S	X	X

## Instrument Coding Example

	C202	A	1	1	1	01	R	STD
COMMANDER 200 PID Controller with Ramp/Soak								
Standard Build Code								
SPST Relay Control Output								
1 SPST Alarm Relay								
Retransmission and Digital Input								
Firmware Version 1								
Power Supply 230V a.c.								
Company Standard Configuration								



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