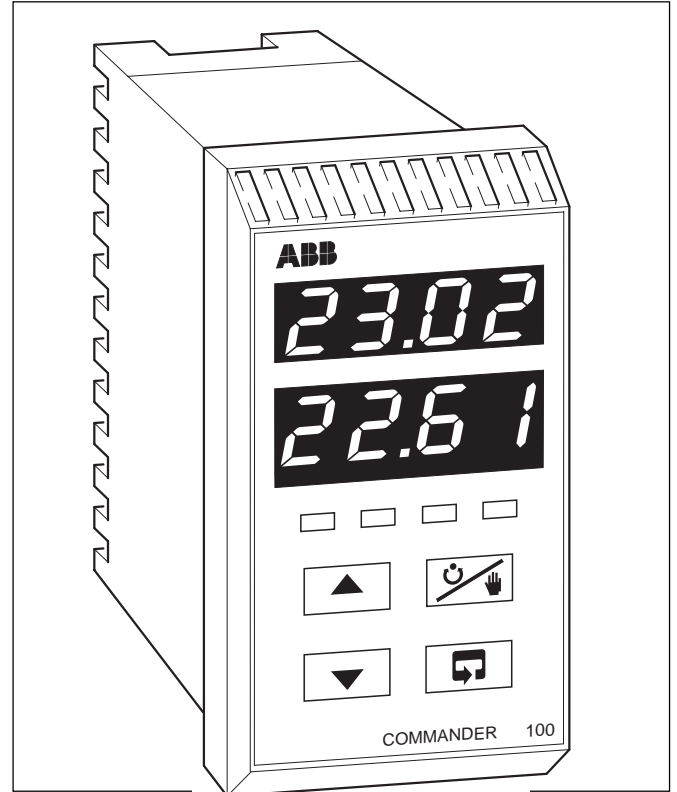


*Specification DataFile*

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- **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
  
- **Universal process input with transmitter power supply**
  - direct connection for any process signal
  
- **Hoseproof front panel and full noise immunity**
  - reliability in the harshest environments
  
- **RS485/MODBUS serial communications**
  - SCADA, PLC and open systems integration



*COMMANDER 100 –  
the-easy-to use 1/8 DIN controller  
with extensive application  
capabilities*

## COMMANDER 100

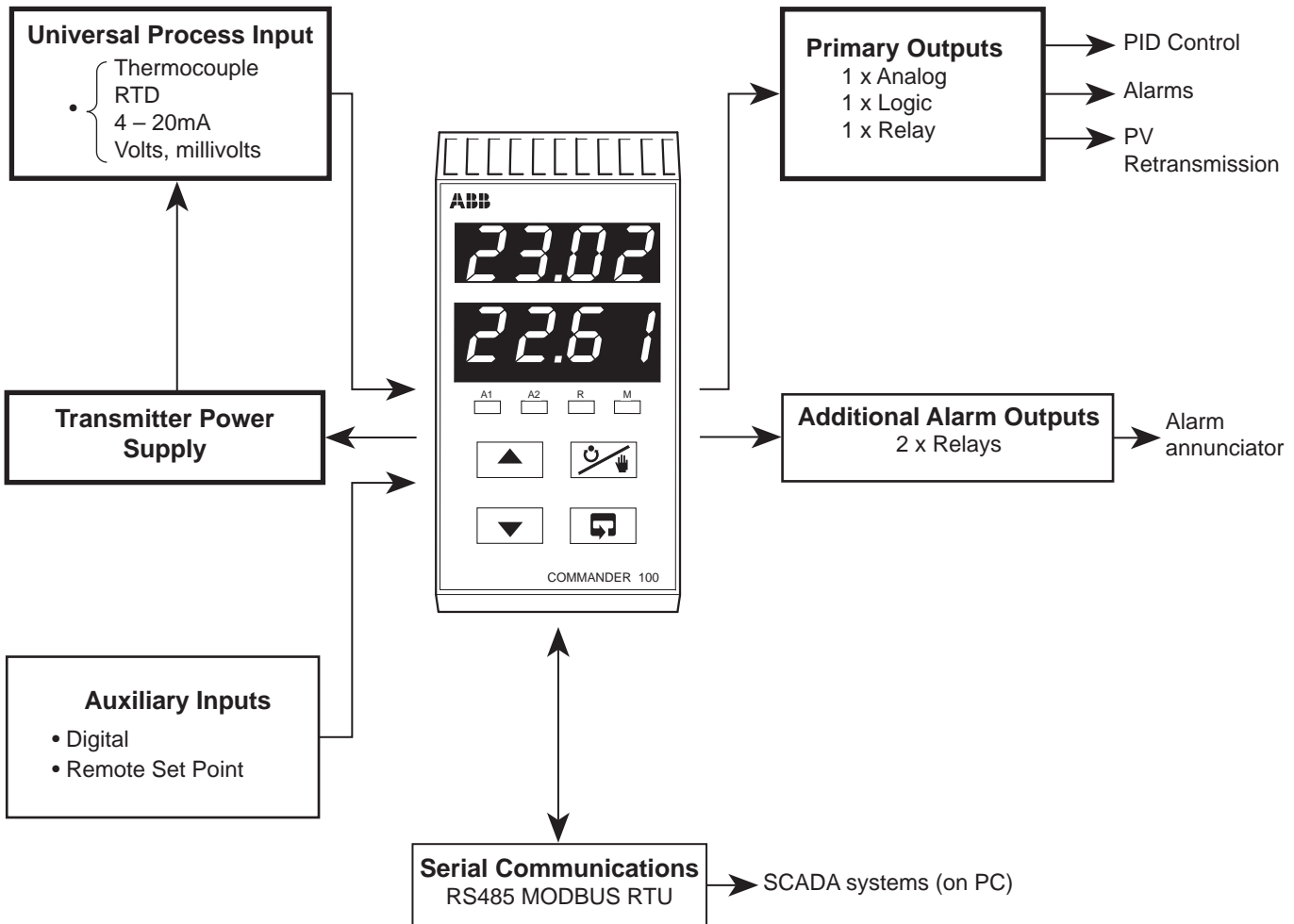
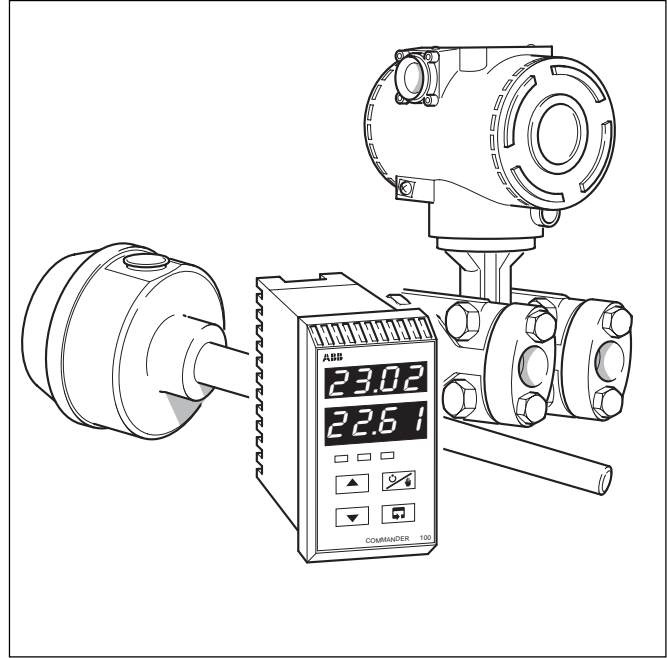
The COMMANDER 100 Universal Process controller is a highly versatile, **single loop controller** designed to be exceptionally easy to operate and set up.

Universal input and **integral transmitter power supply** ensure that the COMMANDER 100 has the capabilities to measure a wide range of process signals such as temperature, pressure, flow and level.

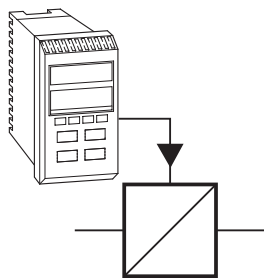
**Analog, logic and relay control outputs** are all fitted as standard, with the option to add further i/o capabilities such as additional relays, remote set point and digital input, to suit your application.

The **configuration** of the COMMANDER 100 is simply achieved by moving the security switch and entering a simple code from the front panel keys. No passwords, no input links, no complications.

With **hoseproof front panel protection** and superior RF immunity as standard the COMMANDER 100 has been designed to control reliably in the harshest of today's industrial environments.



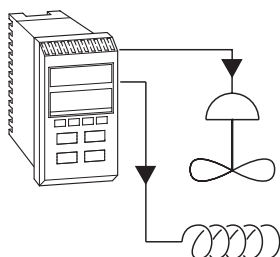
KEY: Standard Option



## PID Control

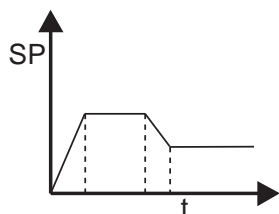
Simple PID control is available using any of the unit's three built-in outputs.

- 4 – 20mA analog
- Logic 18V time proportioning (to drive solid state relays)
- 5A relay for Time proportioning or On/Off control



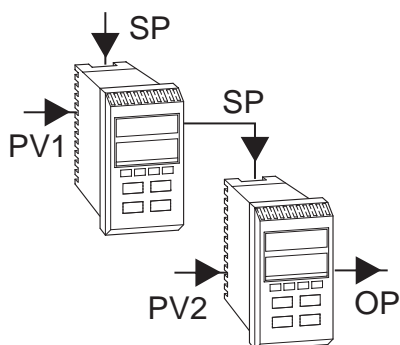
## Heat/Cool

Heat/Cool control strategies may be implemented on the standard COMMANDER 100, using a combination of the analog, logic and relay outputs.



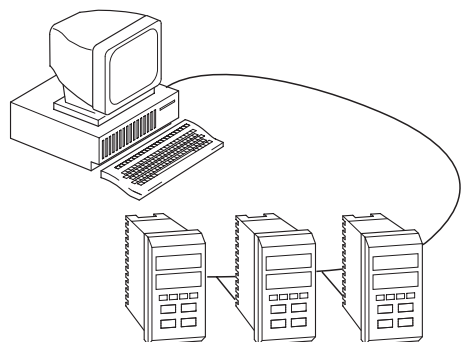
## Ramp/Soak Set Point Profiles

The ramp/soak facility available on every COMMANDER 100 provides for a single program, four-segment profile. This facility also includes guaranteed ramp/soak, repeat program, skip and reset.



## Master/Slave and Cascade

Two or more COMMANDER 100s can be used in 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 COMMANDER 100 can communicate with PLCs and SCADA systems using the MODBUS protocol.

## Specification

### Summary

P, PI, PID single loop controller

Autotune facility

Fully user configurable

Hoseproof front face

### Operation

#### Display

High-intensity 7-segment, 2 x 4-digit LED display  
Display range –999 to +9999  
Display resolution  $\pm 1$  digit  
Display height 10mm (0.39inches)

#### Configuration

User defined via front panel or PC Configurator

### 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

### Outputs

#### 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  
Dielectric 500V d.c. from i/p (not isolated from logic o/p)

#### Logic output

18V d.c. at 20mA  
Min. load 400 $\Omega$   
Dielectric 500V d.c. from i/p (not isolated from control o/p)

#### Relay output

One relay as standard (SPDT) – 5A @ 115/230V a.c.

### Analog Inputs

#### 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  
D.C. voltage

#### Input impedance

mA 100 $\Omega$   
mV, V  $> 10M\Omega$

#### Linearizer functions

Programmable for standard inputs:  
SqRoot, 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 –  $< 0.05^{\circ}\text{C}/^{\circ}\text{C}$  change in ambient temperature

#### Input protection

Common mode isolation  $> 120\text{dB}$  at 50/60Hz with 300 $\Omega$  imbalance  
Series mode rejection  $> 60\text{dB}$  50/60Hz

#### Transmitter power supply

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

### 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

#### Relay output

SPDT – 5A @ 115/230V a.c.

#### Digital input

Type – Volt-free  
Minimum pulse – 250ms  
(not isolated from remote set point)

#### 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 d.c., 100 $\Omega$  nominal input impedance  
Preset to process variable engineering units  
(not isolated from digital inputs)

## Standard Analog Input Ranges

Thermocouple	Maximum Range °C	Maximum Range °F	Accuracy (% of reading)
B	-18 to 1800	0 to 3270	0.25% or $\pm 2^{\circ}\text{C}$ (above 200°C)
E	-100 to 900	-140 to 1650	0.25% or $\pm 0.5^{\circ}\text{C}$
J	-100 to 900	-140 to 1650	0.25% or $\pm 0.5^{\circ}\text{C}$
K	-100 to 1300	-140 to 2350	0.25% or $\pm 0.5^{\circ}\text{C}$
N	-200 to 1300	-325 to 2350	0.25% or $\pm 0.5^{\circ}\text{C}$
R	-18 to 1700	0 to 3000	0.25% or $\pm 1.0^{\circ}\text{C}$ (above 300°C)
S	-18 to 1700	0 to 3000	0.25% or $\pm 0.5^{\circ}\text{C}$ (above 200°C)
T	-250 to 300	-400 to 550	0.25% or $\pm 0.5^{\circ}\text{C}$

RTD	Maximum Range °C	Maximum Range °F	Accuracy (% of reading)
PT100	-200 to 600	-325 to 1100	0.25% or $\pm 0.5^{\circ}\text{C}$

Linear Inputs	Range		Accuracy (% of reading)
Milliamps	0 to 20		0.25% or $\pm 2\mu\text{A}$
Milliamps	4 to 20		0.25% or $\pm 2\mu\text{A}$
Volts	0 to 5		0.25% or $\pm 200\mu\text{V}$
Volts	1 to 5		0.25% or $\pm 200\mu\text{V}$
Millivolts	0 to 50		0.25% or $\pm 20\mu\text{V}$

Square Root Input	Range		Accuracy (% of reading)
Milliamps	4 to 20		0.25% or $\pm 2\mu\text{A}$

### Notes.

Performance accuracy is not guaranteed at extreme low end of thermocouple and sq. root ranges.

RTD, 3-wire platinum, 100Ω per DIN 43760 standard (IEC751), with range of 0 to 400Ω.  
Min. span below zero Type T 70°C/126°F

Type N 105°C/189°F  
THC standards DIN 43710 IEC 584  
RTD standards DIN 43760 IEC 751

## Physical

### Size

48 wide x 96 high x 125mm (1.89" wide x 3.78" high x 4.92")

### Weight

250g (0.5lb) approximate

## Electrical

### Voltage

85 to 265V a.c. (50/60Hz)  
24V d.c.

### Power consumption

< 6VA

### Power interruption protection

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

## 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

IP65 (NEMA3), case rear IP20

## EMC

### Emissions

Meets requirements of EN50081-2

### Immunity

Meets requirements of EN50082-2

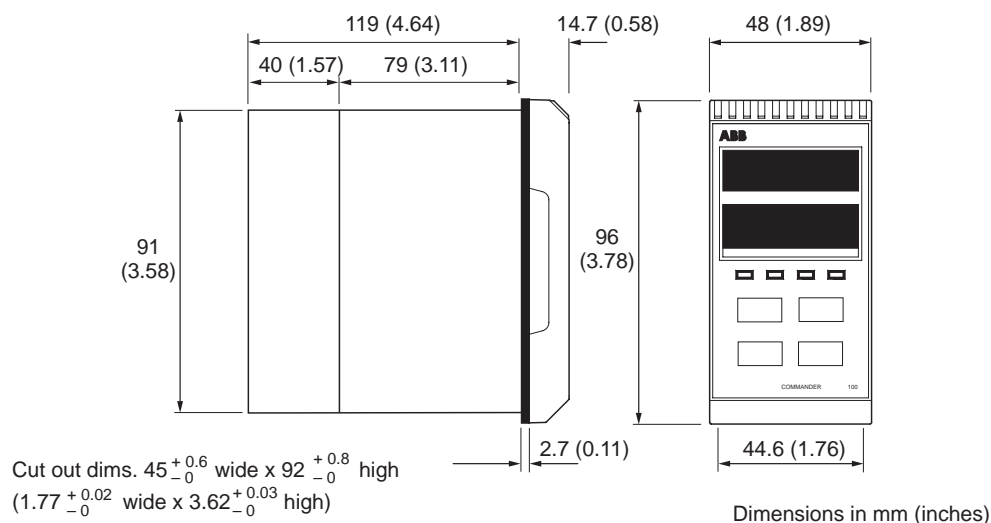
### Design and manufacturing standards

Designed to meet CSA requirements  
CE Mark

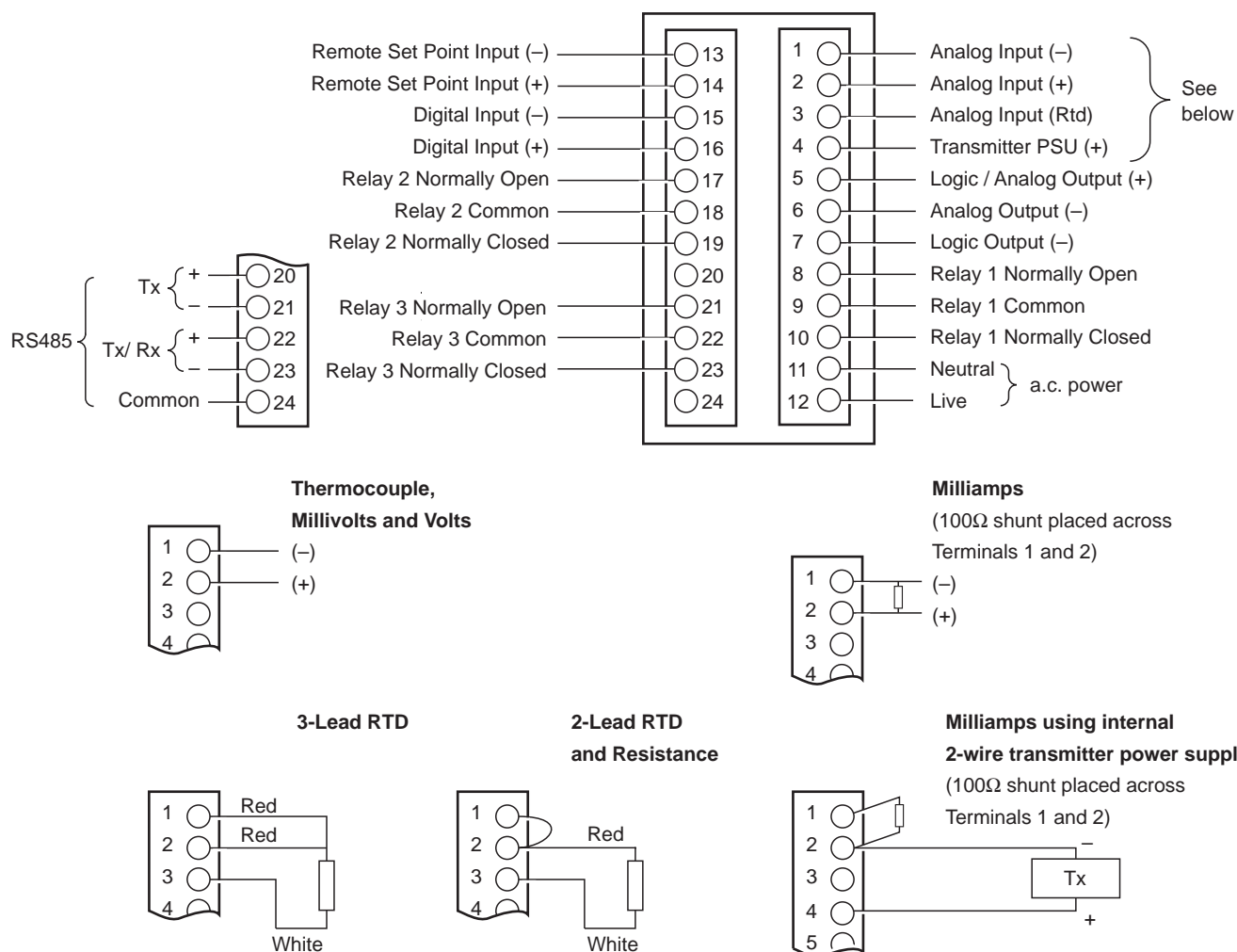
### Electrical safety

IEC 348

## Dimensions



## Wiring Connections



## Ordering Guide

COMMANDER 100 Controller		C100 /	X	X	X	X	/	X	X	X	X
Option Board	– None		0	0							
	– One additional relay		0	1							
	– Two additional relays + one digital input + remote set point 4–20mA		0	2							
	– One additional relay + one digital input +remote set point +RS485/MODBUS		0	3							
Power Supply	85V to 265V a.c.				0						
	24V d.c.				1						
Build	Kent-Taylor Standard				0						
	CSA approval (pending)				1						
	UL approval (pending)				2						
Programming/Special Features	Configured to factory standard							S	T	D	
	Configured to customer detail							C	U	S	
	Agreed special features							S	P	X	X

## Instrument Coding Example

	C100 /	01	0	0/	STD
COMMANDER 100 Universal Process Controller					
One additional relay					
85V to 265V a.c. power supply					
Standard build					
Configured to factory standard					



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