

Specification DataFile

- **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

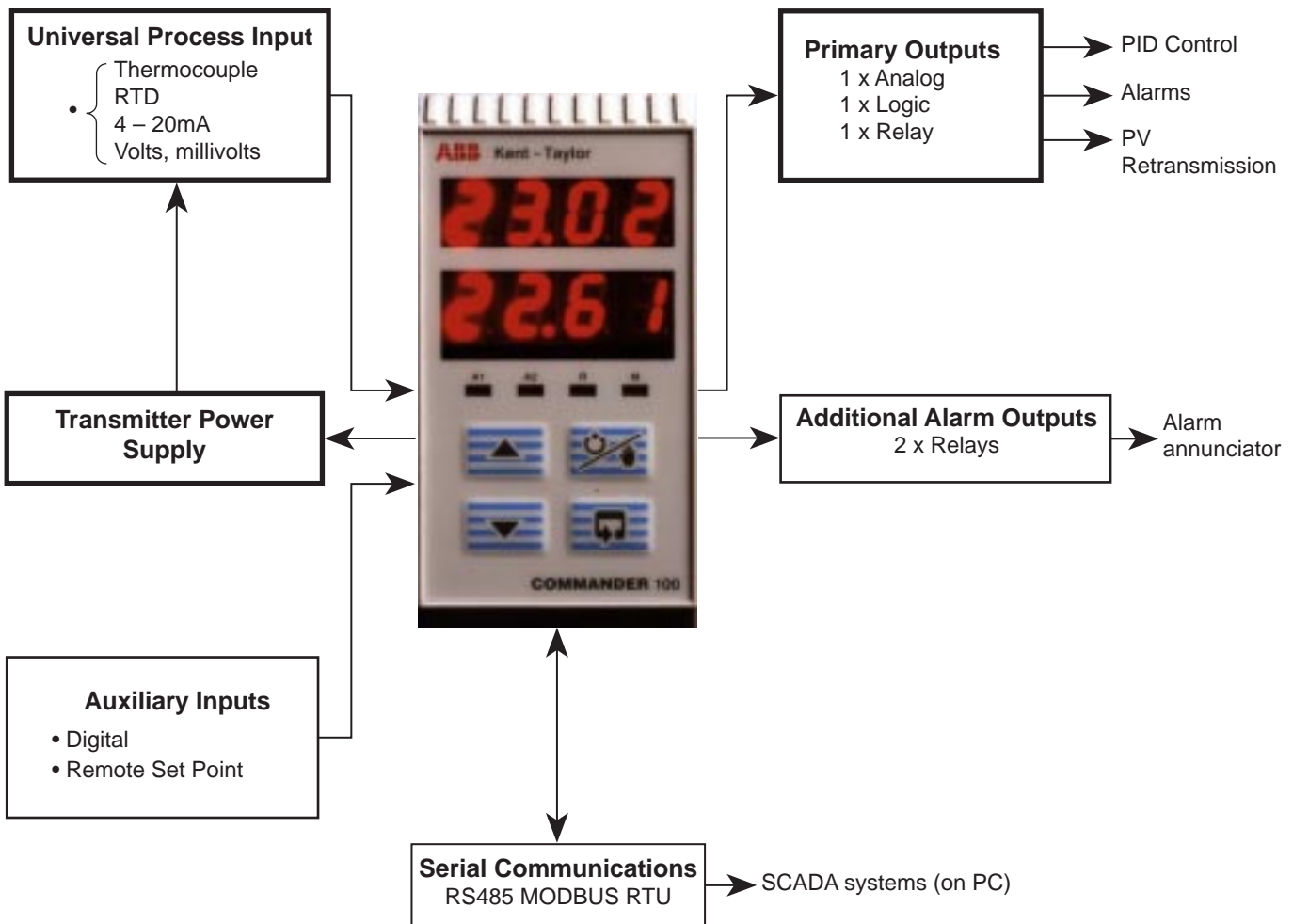
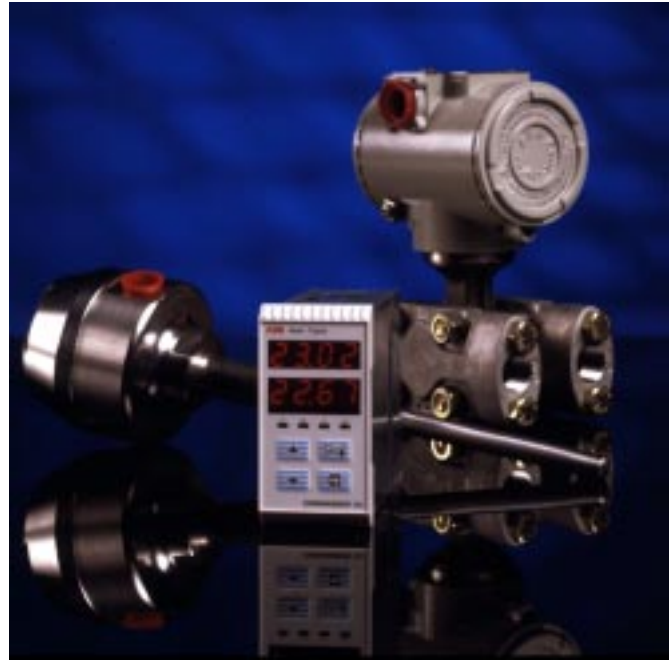
The COMMANDER 100 Universal Process controller is a highly versatile, **single loop controller** designed to be exceptionally easy to operate and set up.

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.

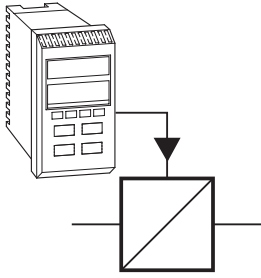
Analog, logic and relay control outputs are all fitted as standard, with the option to add further i/o capabilities such as additional relays, remote set point and digital input, to suit your application.

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.



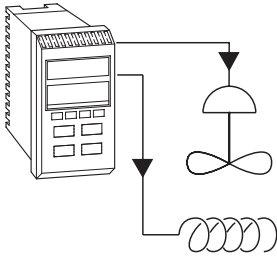
KEY: Standard Option



PID Control

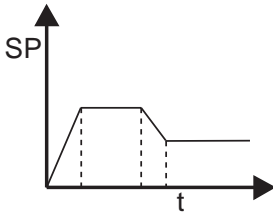
Simple PID control is available using any of the unit's three built-in outputs.

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



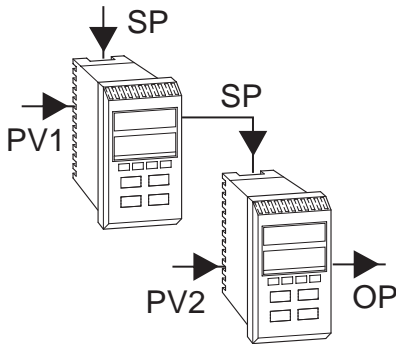
Heat/Cool

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



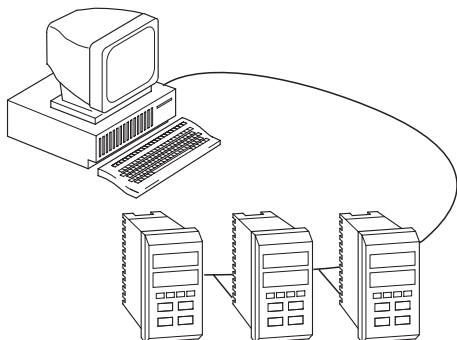
Ramp/Soak Set Point Profiles

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 ±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 (750Ω at 20mA)
Accuracy ≤ 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 400Ω
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 100Ω
mV, V >10MΩ

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°C/°C change in ambient temperature

Input protection

Common mode isolation >120dB at 50/60Hz with 300Ω imbalance
Series mode rejection > 60dB 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., 100Ω 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 ±2°C (above 200°C)
E	-100 to 900	-140 to 1650	0.25% or ±0.5°C
J	-100 to 900	-140 to 1650	0.25% or ±0.5°C
K	-100 to 1300	-140 to 2350	0.25% or ±0.5°C
N	-200 to 1300	-325 to 2350	0.25% or ±0.5°C
R	-18 to 1700	0 to 3000	0.25% or ±1.0°C (above 300°C)
S	-18 to 1700	0 to 3000	0.25% or ±0.5°C (above 200°C)
T	-250 to 300	-400 to 550	0.25% or ±0.5°C

RTD	Maximum Range °C	Maximum Range °F	Accuracy (% of reading)
PT100	-200 to 600	-325 to 1100	0.25% or ±0.5°C

Linear Inputs	Range	Accuracy (% of reading)
Milliamps	0 to 20	0.25% or ±2μA
Milliamps	4 to 20	0.25% or ±2μA
Volts	0 to 5	0.25% or ±200μV
Volts	1 to 5	0.25% or ±200μV
Millivolts	0 to 50	0.25% or ±20μV

Square Root Input	Range	Accuracy (% of reading)
Milliamps	4 to 20	0.25% or ±2μA

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

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

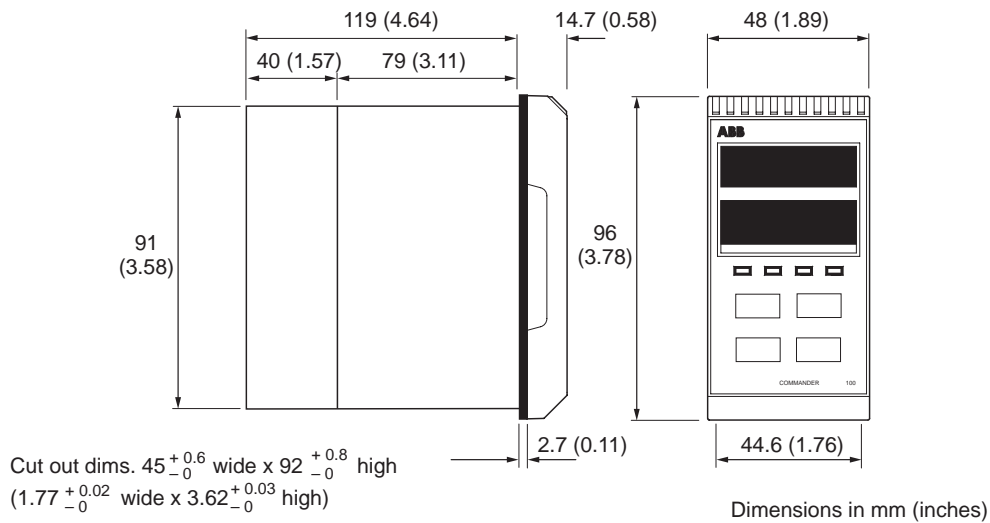
Designed to meet CSA requirements

CE Mark

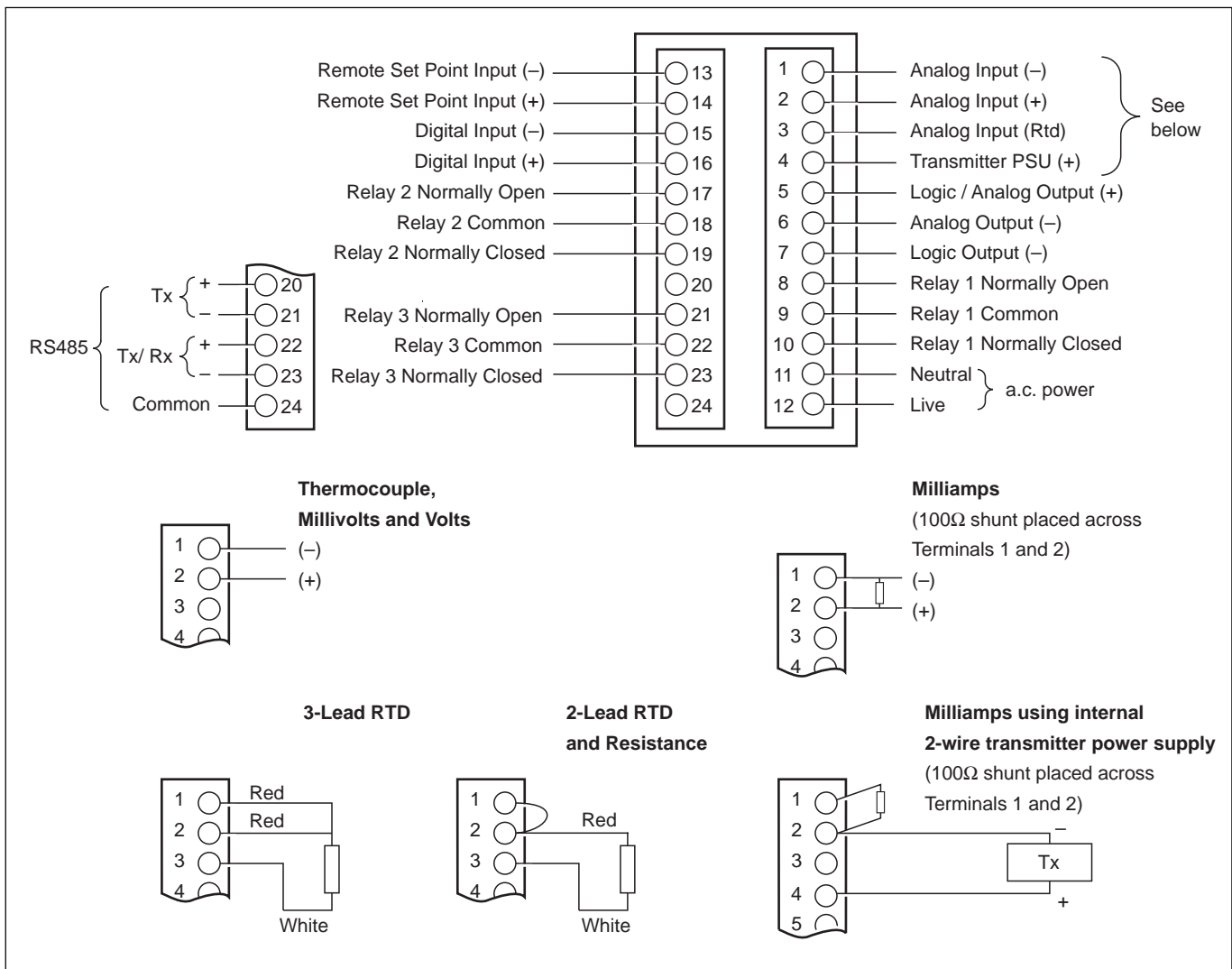
Electrical safety

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	
Progammng/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

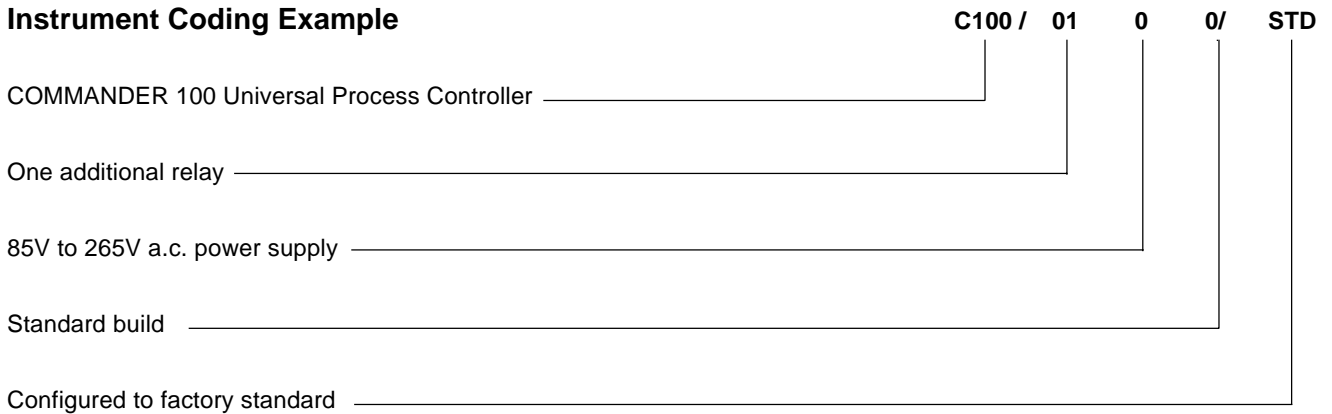




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