MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Amikon cover with the official ABB C100 data sheet

Commander C100 / 0200 / STD

C100/0200/STD

UNIVERSAL PROCESS CONTROLLER

OFFICIAL SOURCES

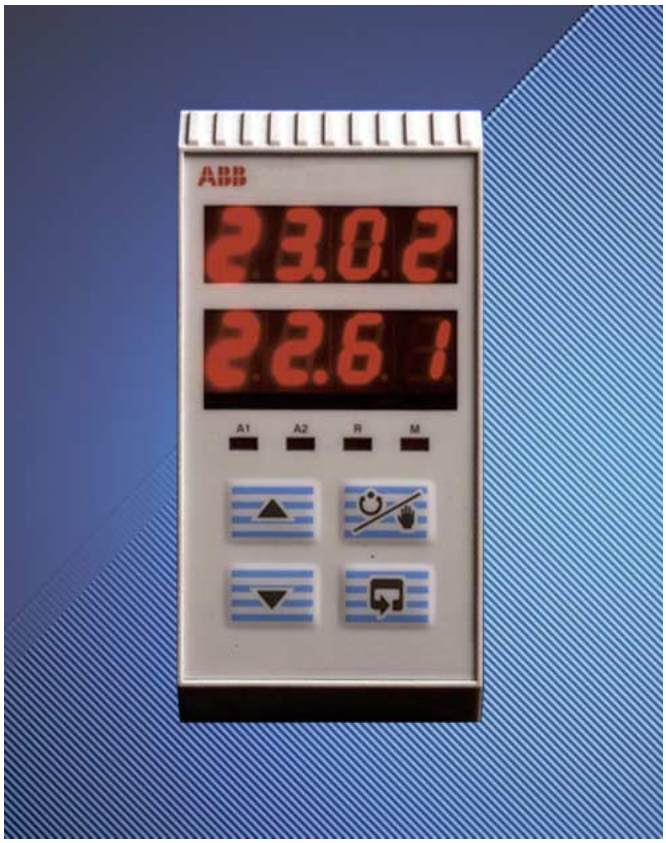
ABB SS/C100_10: complete 12-page data sheet. Product data and ordering reference, not an installation manual.

Data Sheet
SS/C100_10

ControlIT
1/8 DIN Process Controller
C100

Industrial IT enabled

- **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



C100 –
the easy-to use 1/8 DIN controller
with extensive capabilities

ABB

C100

The C100 Universal Process controller is a highly versatile, **single loop controller** designed to be exceptionally easy to operate and set up.

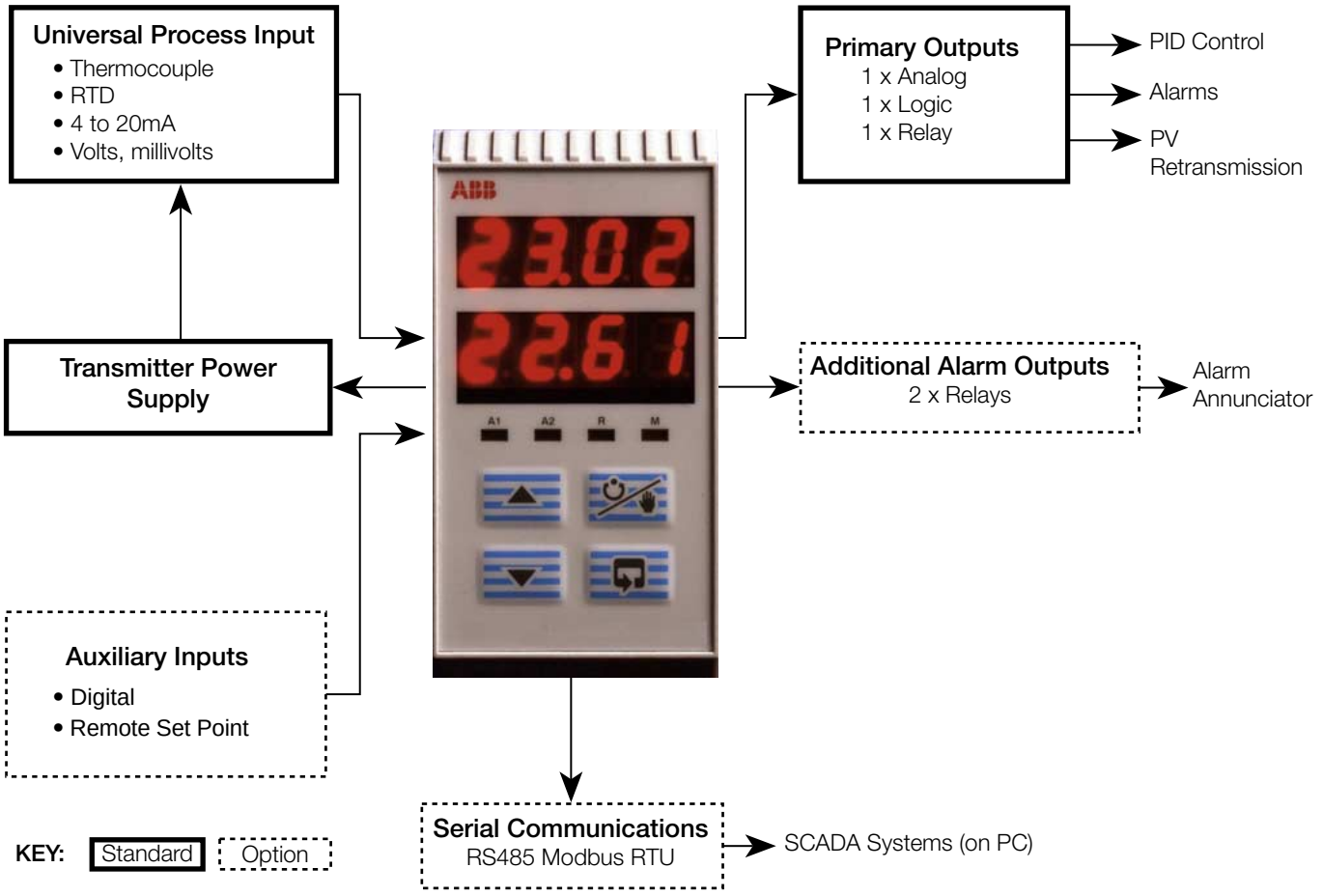
Universal input and **integral transmitter power supply** ensure that the C100 has the capabilities to measure a wide range of process signals such as temperature, pressure, flow and level.

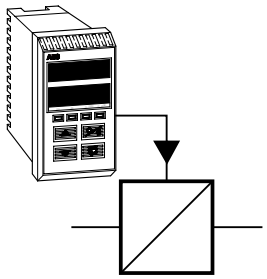
Analog, logic and relay control outputs are all fitted as standard, with the option to add further i/o capabilities such as additional relays, remote set point and digital input, to suit your application.

The **configuration** of the C100 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 C100 has been designed to control reliably in the harshest of today's industrial environments.



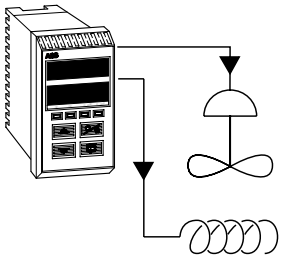

Universal Process Input
• Thermocouple
• RTD
• 4 to 20mA
• Volts, millivolts
Primary Outputs
1 x Analog
1 x Logic
1 x Relay
PID Control
Alarms
PV Retransmission
Transmitter Power Supply
Additional Alarm Outputs
2 x Relays
Alarm Annunciator
Auxiliary Inputs
• Digital
• Remote Set Point
Serial Communications
RS485 Modbus RTU
SCADA Systems (on PC)
KEY:
Standard
Option



PID Control

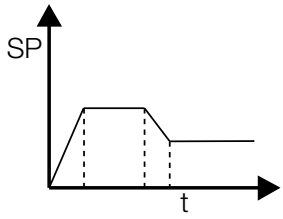
Simple PID control is available using any of the unit's three built-in outputs.

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



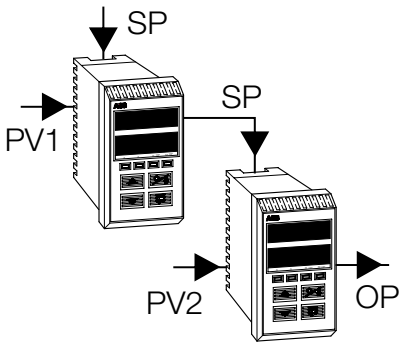
Heat/Cool

Heat/Cool control strategies may be implemented on the standard C100, using a combination of the analog, logic and relay outputs.



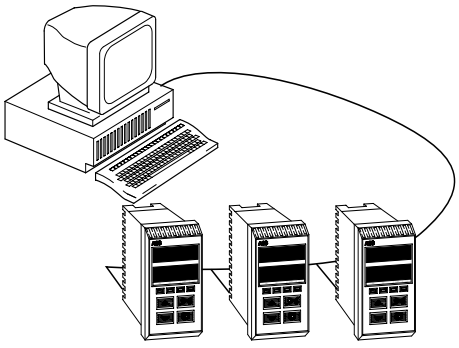
Ramp/Soak Set Point Profiles

The ramp/soak facility available on every C100 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 C100s 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 C100 can communicate with PLCs and SCADA systems using

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 (0.39 in.)

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 switche Run/hold or run/stop from digital input

Alarms

Number	Two user-defined
Type	High/low process High/low deviation

...Specification

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

DC 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

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	

...Specification

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 DC from I/P (not isolated from logic O/P)

Logic output

18V DC	at 20mA
Min. load	400Ω
Dielectric	500V DC from I/P (not isolated from control O/P)

Relay output

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

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 AC

Digital input

Type	Volt-free
Minimum pulse	250ms (not isolated form 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 DC, 100Ω nominal input impedance

Preset to process variable engineering units (not isolated from digital inputs)

Physical

Size

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

Weight

250g (0.5lb) approximate

Electrical

Voltage

85 to 265V AC (50/60Hz)

24V DC

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

CE Mark

Safety standards

EN61010 – 1

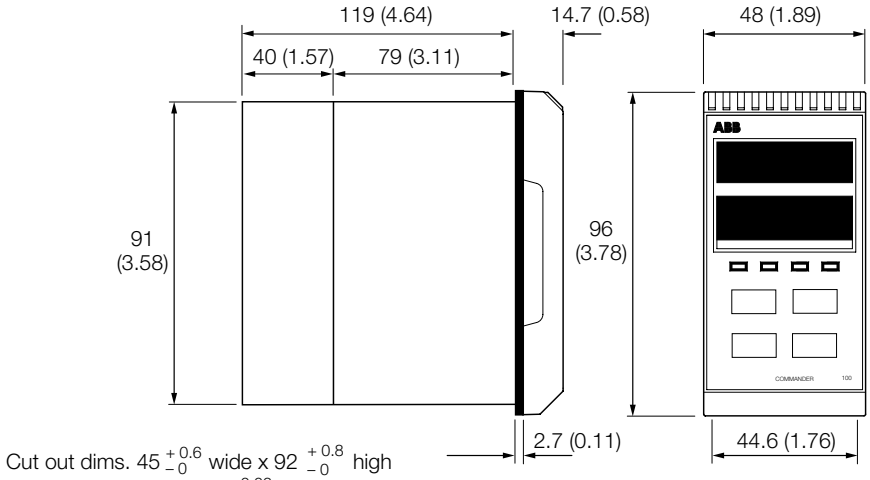
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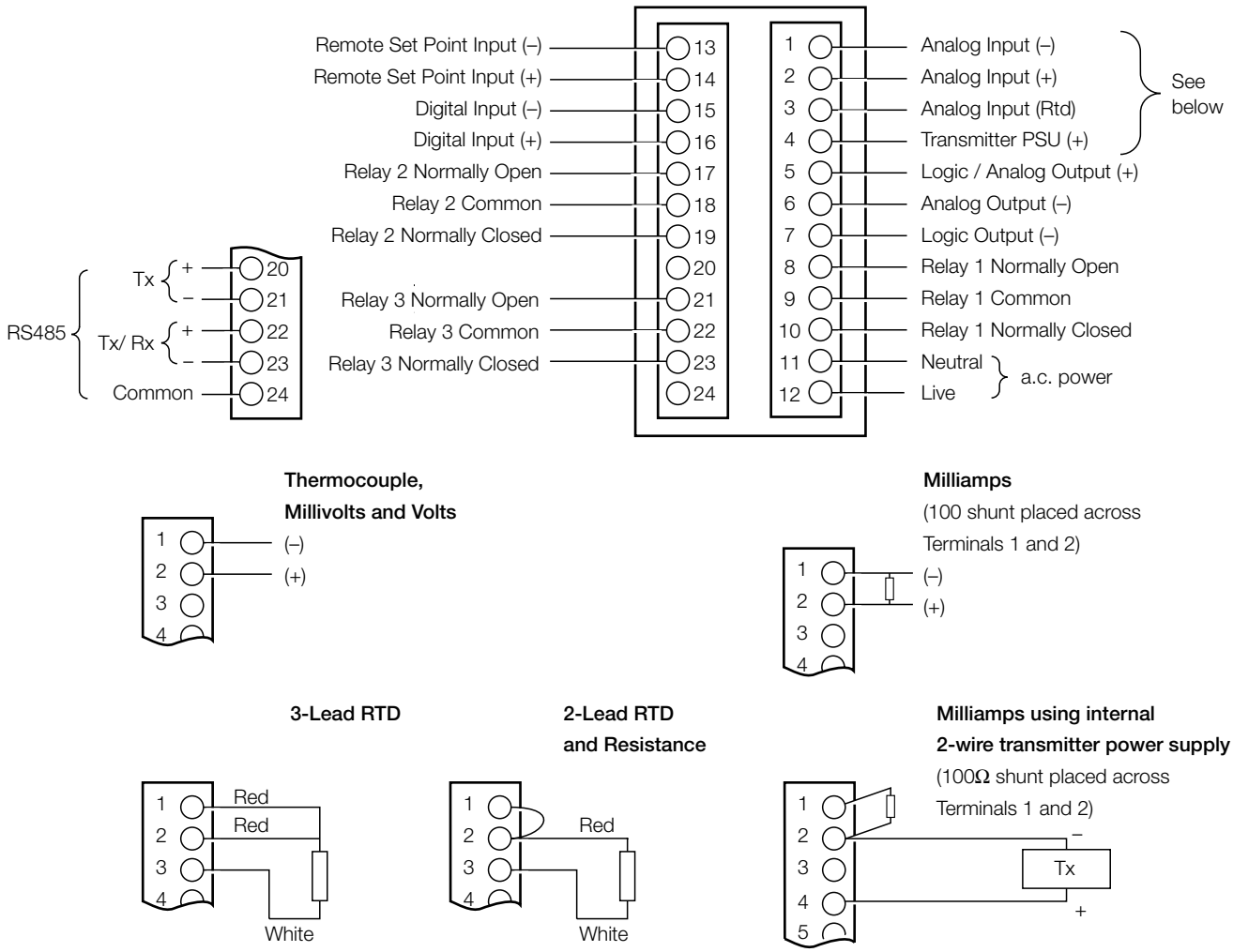
Dimensions

Dimensions in mm (in,)



Cut out dims. $45^{+0.6}_{-0}$ wide x $92^{+0.8}_{-0}$ high
($1.77^{+0.02}_{-0}$ wide x $3.62^{+0.03}_{-0}$ high)

Electrical Connections



Ordering Guide

C100 1/8 DIN Process 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 to 20mA		0 2			
	– One additional relay + one digital input + remote set point + RS485/Modbus		0 3			
Power Supply	85V to 265V AC			0		
	24V DC			1		
Build	Company Standard				0	
	CSA approval				1	
	UL approval				2	
	FM approval				4	
Progamming/Special Features	Configured to factory standard					S T D
	Configured to customer requirements					C U S
	Special features					S P X X

Instrument Coding Example

C100 / 01 0 0/ STD

C100 1/8 DIN Process Controller

One additional relay

85V to 265V AC power supply

Standard build

Configured to factory standard

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