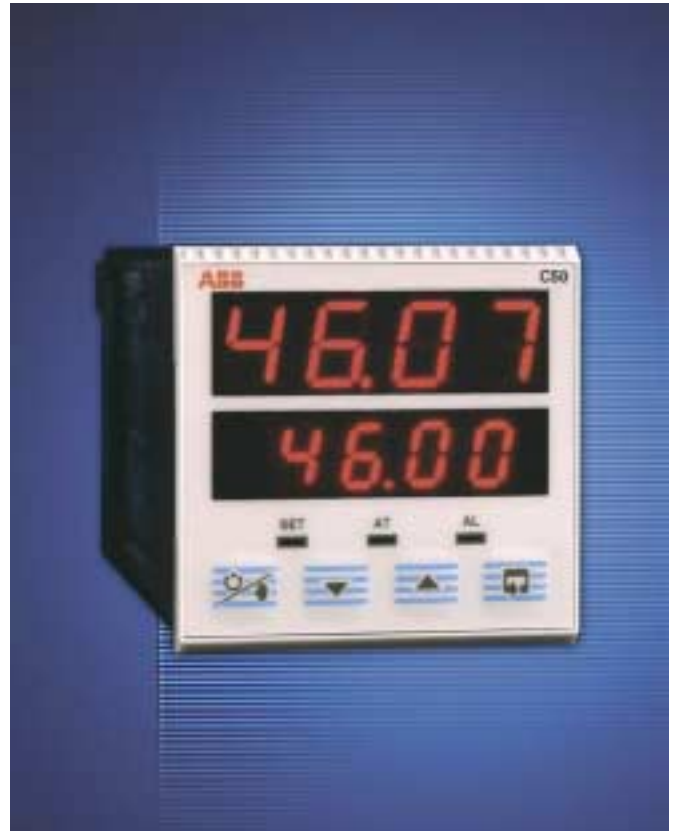




- **High visibility dual 4-digit display**
 - shows set point and process variable
- **Standard relay or logic control output**
 - simple time proportioning or on/off control
- **Optional alarm relay**
 - additional relay to give hi/lo process alarm
- **Universal process input**
 - direct connection for any process signal
- **IP65 (NEMA3) protection and full noise immunity**
 - reliability in the harshest environments
- **NEMA 4X / IP66 construction**
 - hose-down protection
- **One-shot autotune**
 - automatic setting of optimum PID values



**C50 – the 1/16 DIN controller to suit
your simplest applications**

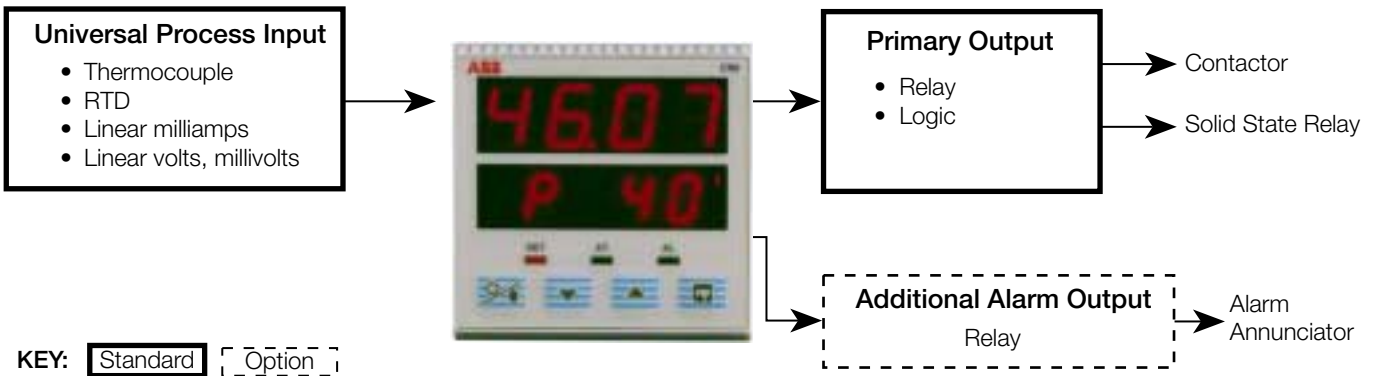


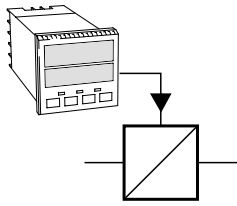
C50

The C50 Controller/Alarm unit is a compact single loop controller, with the capability to measure, indicate and control a variety of process variables.

The unit is ideal for simple PID control, offering On/Off or Time proportioning control with a one shot self-tune facility. The C50 can also act as an independent alarm unit, for example, as an over-temperature safety cutout unit for furnaces or ovens.

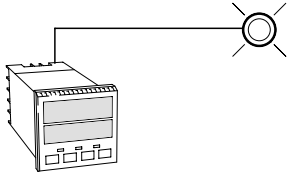
The unit is quickly set up for most process signal inputs and, with IP65 (NEMA3) front panel protection, is suitable for a wide range of applications.





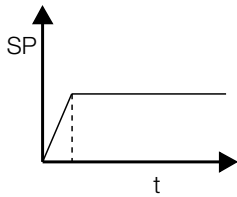
PID Control

The unit's primary relay or logic output can provide a time proportioning PID output, for control of contactors and solid state relays (SSR).



Override Alarm

By configuring the relay output as an overrange alarm, the C50 can act as an independent alarm unit, providing protection for your process.



Ramping Set Point

To reduce shock to the process when changing set point, the C50 can be configured to ramp up to the new set point over a preset period of time.

Specification

Summary

PID single loop controller/alarm unit
Autotune Facility
Fully User Configurable
IP65 (NEMA3) Front Face

Operation

Display

High intensity, 7-segment, 2 x 4 red LED display
Size upper 10mm (0.39 in.)
 lower 8mm (0.31 in.)

Configuration

User defined via front panel and internal links.

Outputs

Primary output (fitted as standard)

User configurable as either:

Relay:

SPDT 2A 120/240V AC

or

TTL Logic (SSR Drive):

Digital >4.2V DC for

Min load 1k Ω

Not isolated from input

Output functions

User configurable as either:

On/Off control output

Time proportioning PID control output

Physical

Size

48mm (1.89 in.) x 48mm (1.89 in.)
x 110mm (4.33 in.) (depth behind panel)

Weight

<200g (0.44lbs.) approx.

Option

Second relay output, configurable for alarms, meets the specification of the standard relay output.

Electrical

Voltage:

90 to 264 V AC 50/60 Hz

Power consumption:

<4VA

Analog Inputs

Single universal process input.

Type

Universally Configurable for:

- Thermocouple (THC)
- Resistance Thermometer (RTD)
- Linear Millivolt
- Linear Current
- Linear DC voltage

Input Sampling Rate

1 sample/250ms

Input impedance:

- Millivolts/THC/RTD >100MΩ
- Volts >47KΩ
- Current <4.7Ω

Linearizer functions

Automatic linearisation of THC types B, J, K, R, S, T, L, N and RTD Pt100

Broken Sensor protection

For the following options, break detected within two seconds and control outputs DOWN scale to OFF (0% power):

THC, RTD, DC mV, DC Volts (1 – 5V and 2 – 10V), DC mA (4 to 20mA).

Cold junction compensation:

Automatic CJC incorporated as standard.

Input noise rejection

Common mode rejection: >120dB at 50/60Hz with balanced lead.

Series mode rejection: >500% of span at 50/60Hz.

Accuracy

Measurement error: <± 0.25% of span ± 1LSD

Linearizer: Typically ±0.2 °C

Display range: –1999 to +9999

CJC accuracy: <± 0.05 °C /°C change in ambient temperature

Electrical Input Ranges

Input Type	Min. Value	Max. Value	Min. Value	Max. Value
mV	0	50	10	50
V	0	5	1	5
V	0	10	2	10
mA	0	20	4	20

Temperature Limits

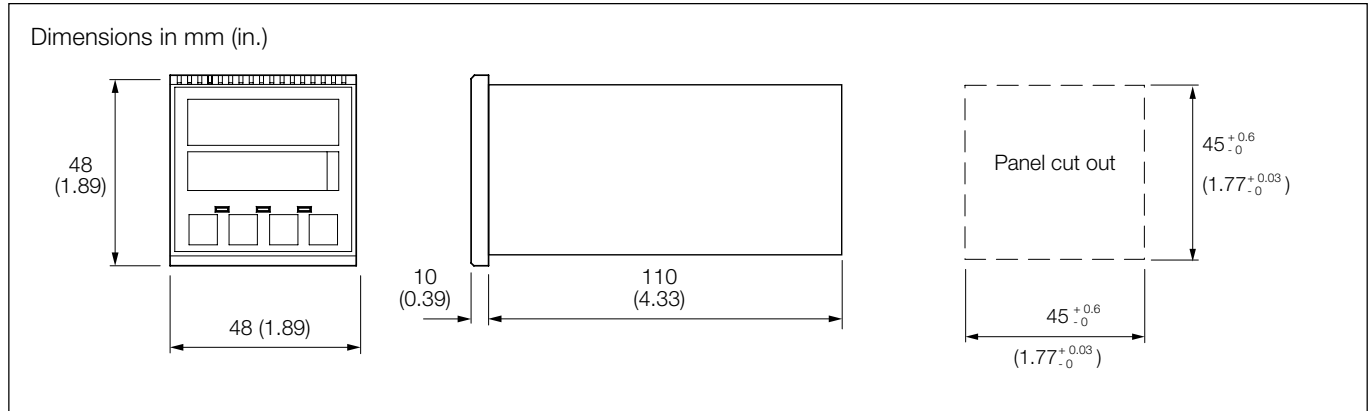
THC Type Per NBS125 & IEC584	°C		°F	
	Min.	Max.	Min.	Max.
Type R	0	1650	32	3002
Type S	0	1649	32	3000
Type J	0	205.4	32	401.7
	0	450	32	842
	0	761	32	1401
Type T	–200	262	–328	503
	0	260.6	32	501
Type K	–200	760	–328	1399
	–200	1373	–328	2503
Type L	0	205.7	32	402.2
	0	450	32	841
	0	762	32	1403
Type B	100	1842	211	3315
Type N	0	1399	32	2550
	0	800	32.0	1471
Type RTD per DIN 43760 & IEC751	–100.9	100	–149.7	211.9
	–200	206	–328	402
	–100.9	537.3	–149.7	999
	0	100.9	32	213.6
	0	300	32	571
	0	800	32.0	1471

Note.

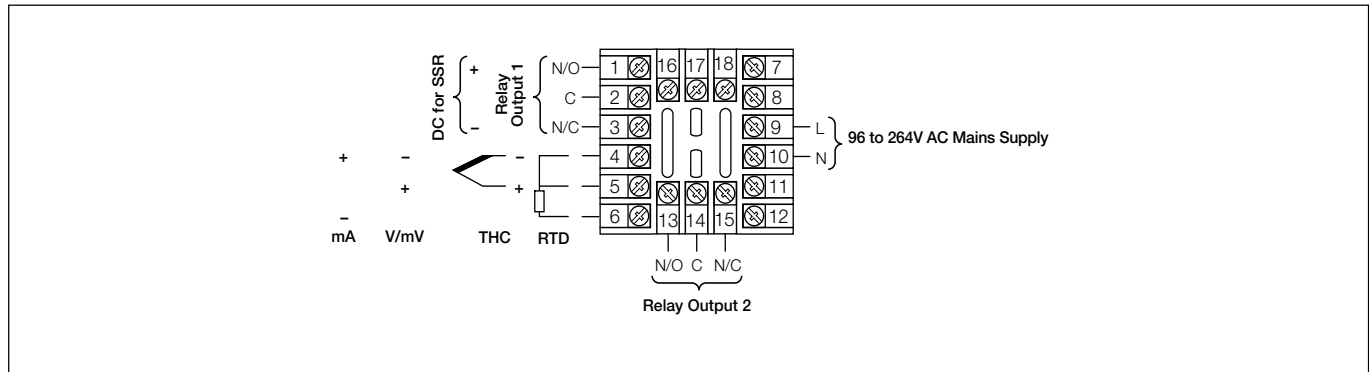
Performance accuracy is not guaranteed below 600°C (112°F) for types B, R and S thermocouples.

RTD, 3-wire platinum, 100Ω with range of 0 to 400Ω.

Overall Dimensions



Electrical Connections



Ordering Information

C50 1/16 DIN Controller/Alarm Unit	C50	/ X	X	X	X	X	X	X	X
Language (for manuals only)									
English		K							
French		F							
German		D							
Input Types									
Universal								2	
Output 1									
Relay/Logic									1
Output 2									
None									0
1 Relay									1
Programming/Special Features									
None									0 0 0

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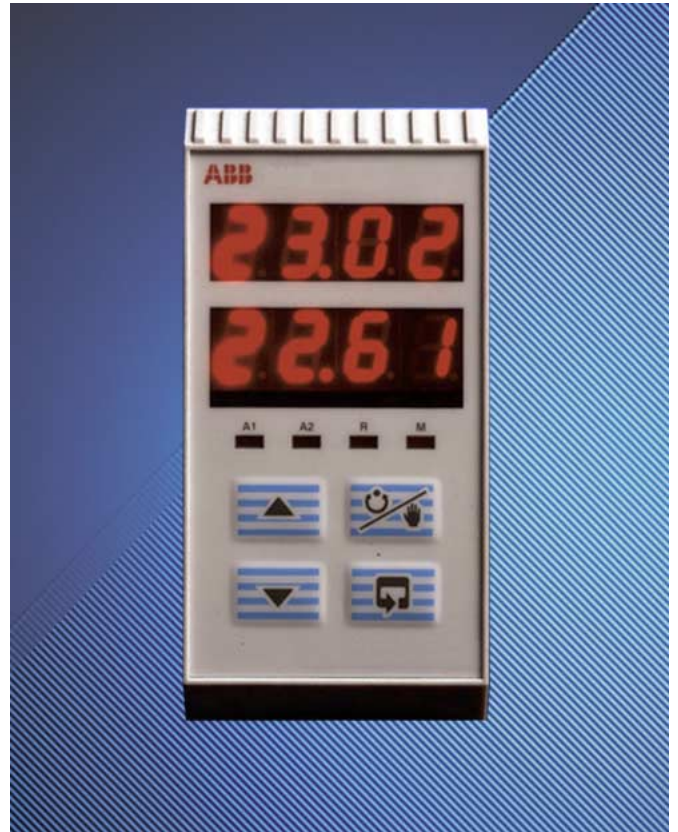


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- **PID controller with 'one shot' auto-tune**
 - single loop, heat/cool and ramp/soak as standard
- **Quick code, front face or PC configuration**
 - easy commissioning and operation using our Windows™-based software
- **Universal process input with 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



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



C100

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

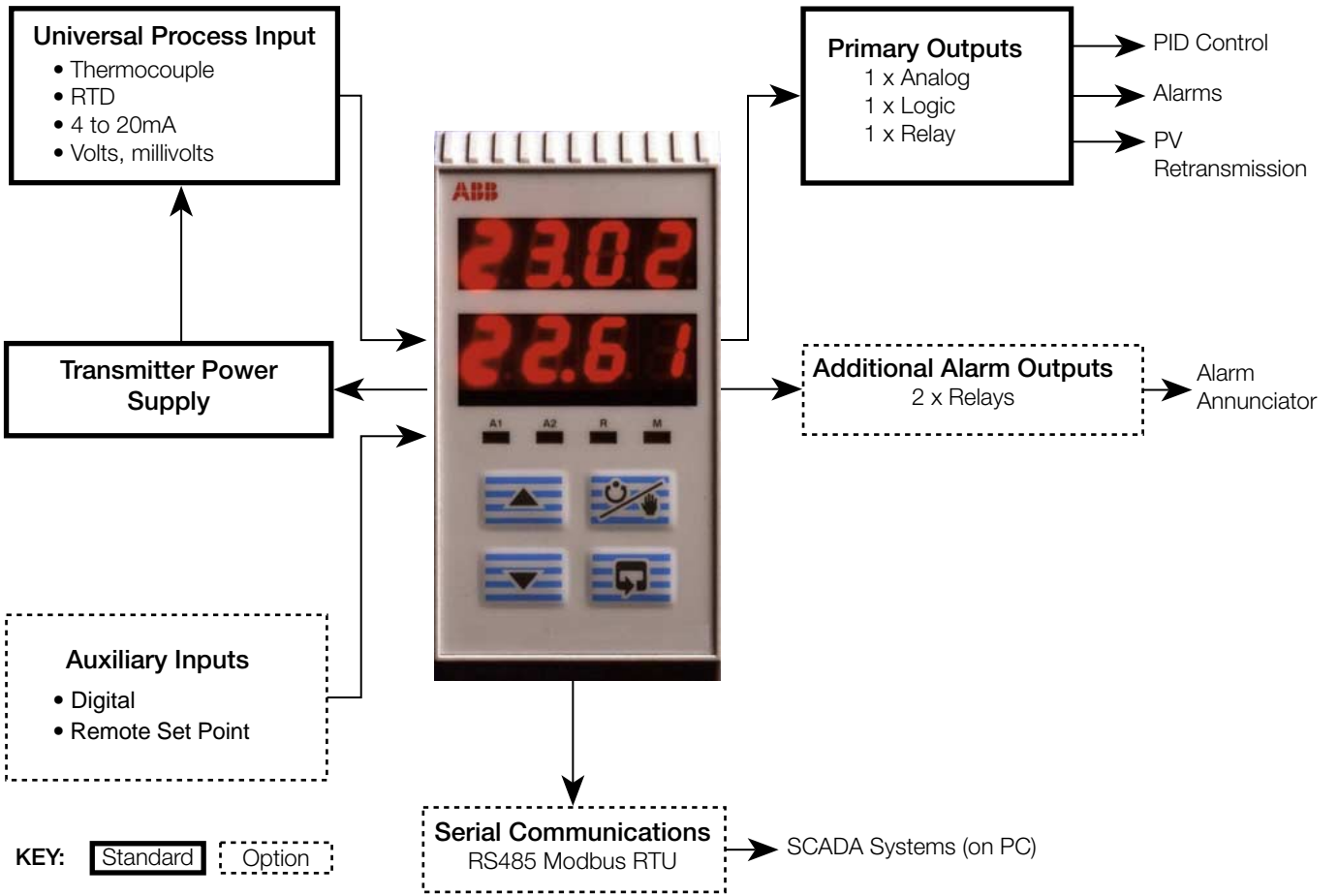
Universal input and **integral transmitter power supply** ensure that the C100 has the capabilities to measure a wide range of process signals such as temperature, pressure, flow and level.

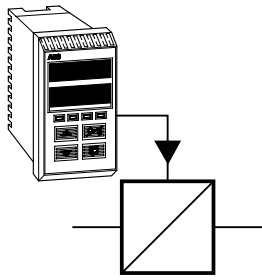
Analog, logic and relay control outputs are all fitted as standard, with the option to add further i/o capabilities such as additional relays, remote set point and digital input, to suit your application.

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.



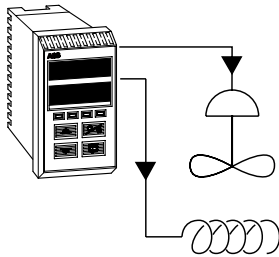




PID Control

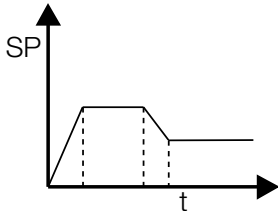
Simple PID control is available using any of the unit's three built-in outputs.

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



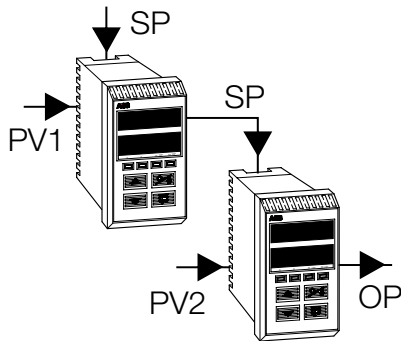
Heat/Cool

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



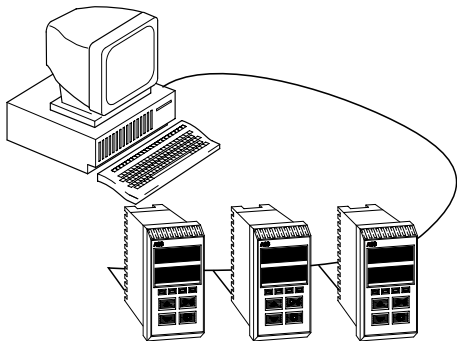
Ramp/Soak Set Point Profiles

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 switch
 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

...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 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 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

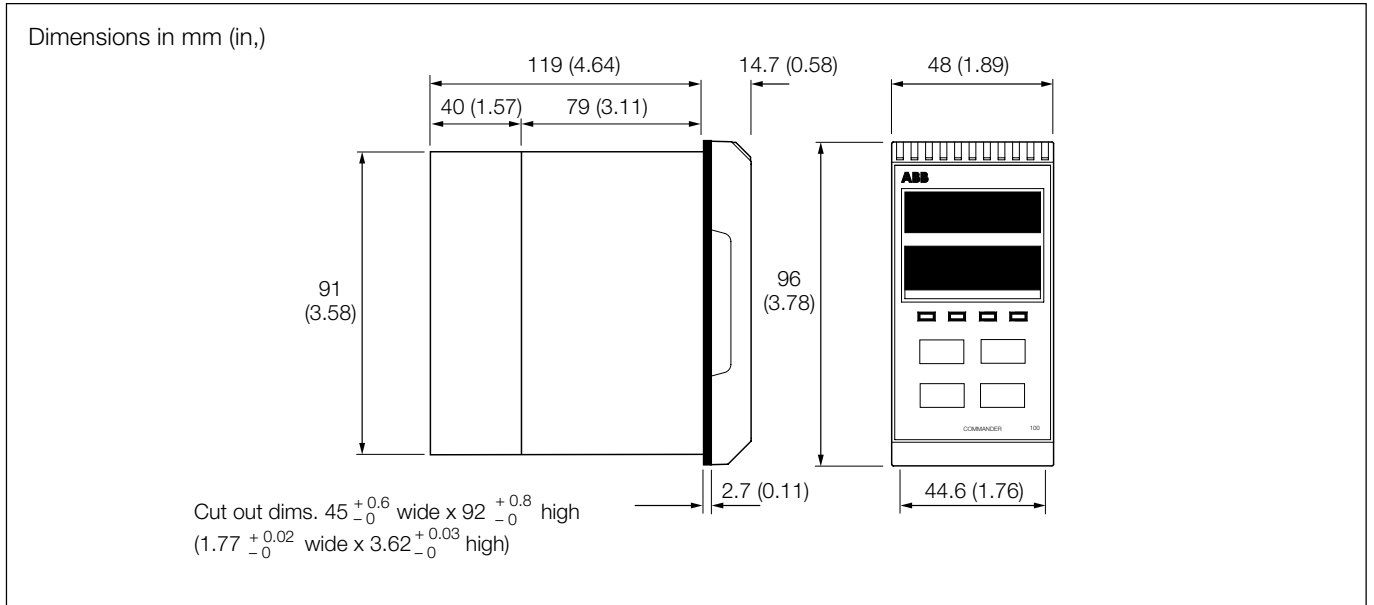
Design and manufacturing standards

CE Mark

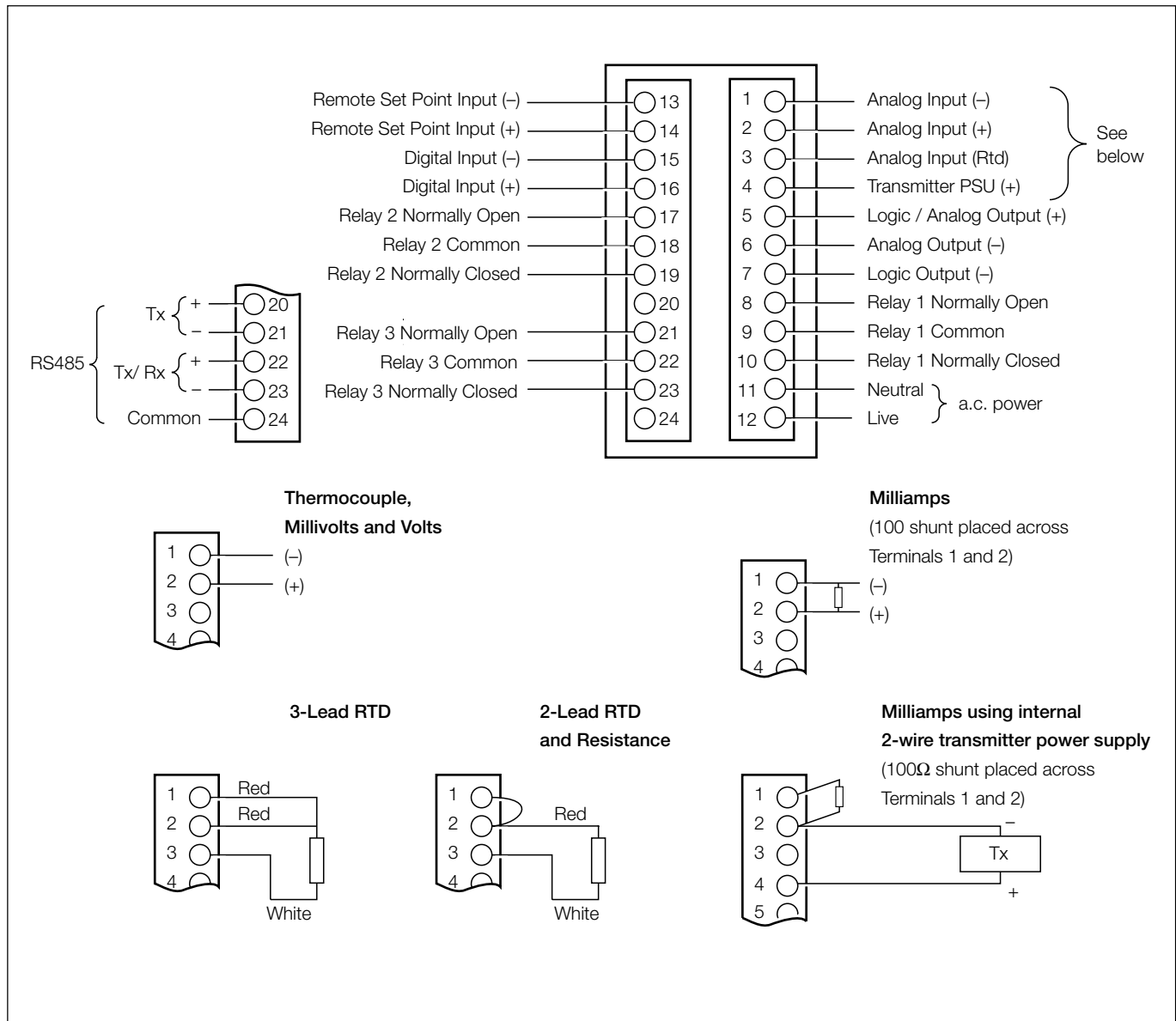
Safety standards

EN61010 – 1
C22.2 No. 1010
UL 310 – 1
FM 3810

Dimensions



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		
Progammng/Special Features	Configured to factory standard									S	T	D
	Configured to customer requirements									C	U	S
	Special features									S	P	X

Instrument Coding Example

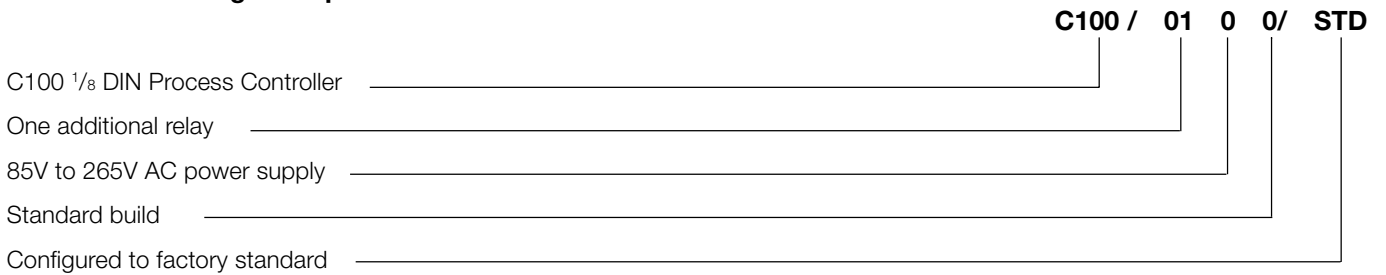


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- **IP66/NEMA 4X wall/pipe-mount housing**
 - no need for an instrument panel
- **Single output, Heat/Cool or Motorized Valve control**
 - one controller for every PID control application
- **9 program, 30 segment Ramp/Soak**
 - comprehensive set point profiling capabilities
- **Analog, relay and logic outputs as standard**
 - extensive control output requirements built-in
- **Universal process input with 0.1% accuracy**
 - direct connection of any process signal, simple installation without recalibration
- **RS485 Modbus serial communications**
 - SCADA, PLC and open systems integration



COMMANDER 310 – gives you the control that you need wherever you need it

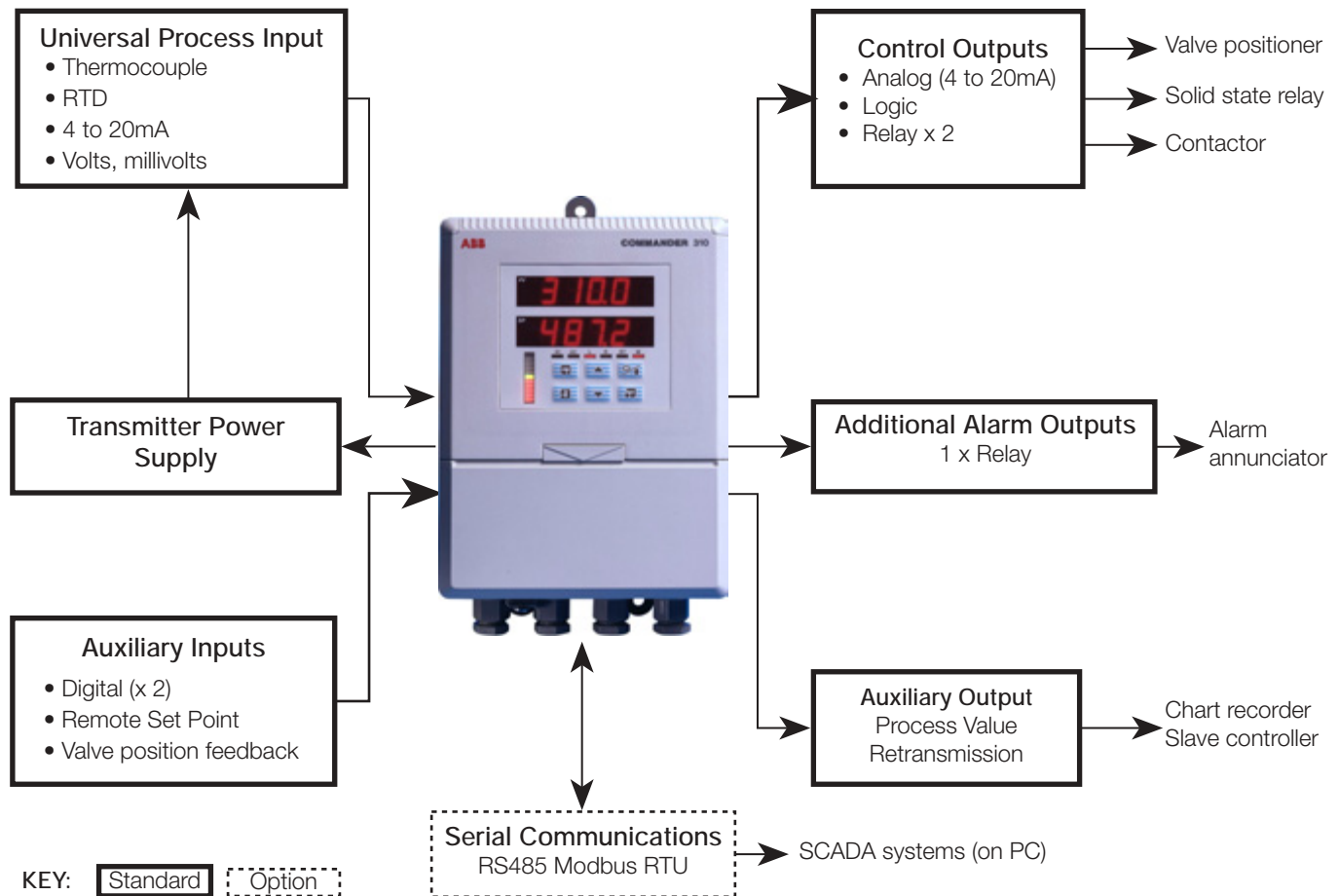
COMMANDER 310

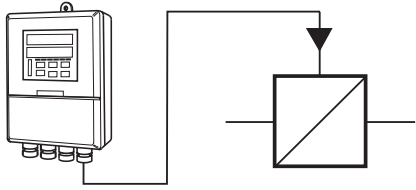
The COMMANDER 310 Wall/pipe-mount Universal Process Controller is a highly versatile single-loop controller packaged in a robust field-mounting housing.

No need to fit an expensive instrument panel when installing or upgrading process equipment. The COMMANDER 310 can be rapidly commissioned by simply fixing it to any flat surface or pipe and making the electrical connections via the cable entry glands on the underside of the unit.

The instrument has extensive control and i/o capabilities fitted as standard, allowing it to be rapidly configured for almost any application.

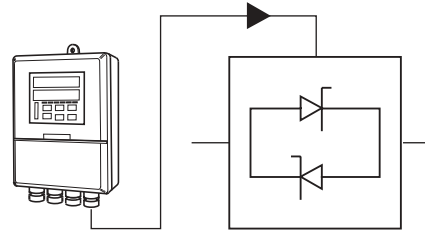
With IP66/NEMA4X water/dust protection the COMMANDER 310 can be mounted right next to your process, no matter how harsh the environment.





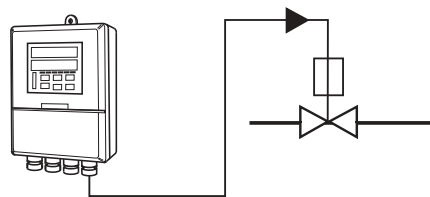
PID Control

The COMMANDER 310's isolated analog output provides the standard control output to I/P converters, thyristors etc. Alternatively, built-in relays can be used to generate a time-proportioning control output.



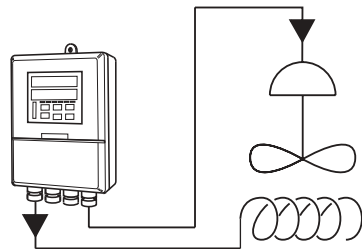
Solid State Relay SSR

A 12V time-proportioning logic output on the standard C310 can be used to drive solid state relays (SSRs).



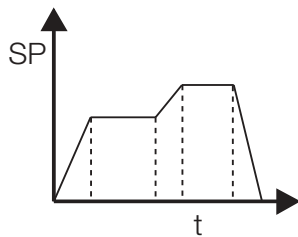
Valve Position

The COMMANDER 310 is fitted with twin relays and a valve-position input for closed-loop control of a motorized valve. 'Boundless' control (without position feedback) and analog control (using 4 to 20mA output) are also available in the standard unit.



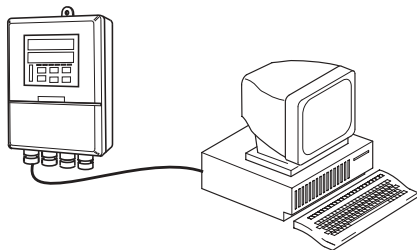
Heat/Cool

Heat/cool control strategies may be implemented on the standard COMMANDER 310, using a combination of the analog control output and one relay.



Ramp/Soak Set Point Profiles

The standard ramp/soak facility provides 30 segments, freely assignable amongst 9 programs. A Segment Event function enables relays to be switched on or off at predetermined points within the program.



Serial Communications

Not only does the COMMANDER 310 provide clear process information in the field, it can also communicate plant data to control rooms via an RS485 link, using Modbus protocol.

Outputs

Control output

Configurable as either:

Analog	in the range of 0 to 20mA
Max. load	15V (750Ω at 20mA)
Accuracy	≤0.1% of span
Isolation	1kV AC
Logic	12V DC (SSR drive)
Max. load	400Ω
Isolation	1kV AC

Retransmission

0 to 20mA configurable for process variable, set point or position feedback values

Max. load	15V (750Ω at 20mA)
Accuracy	≤0.1% of span

Relay outputs

Three relays, configurable for time proportioning control, valve drive or alarms.

SPDT 5A 120/240V AC normally open or normally closed

Option

Serial communications

Connections	– RS485, 4-wire, 1.2k to 9.6k baud rate
Protocol	– Modbus RTU

Electrical

Voltage

115V ±15% or 230V ±15% 50/60Hz (link selectable)

Power consumption

<10VA

Power interruption protection

<60ms/<3 cycles, no effect

>60ms/>3 cycles, controlled reset

Line interference

Meets IEC 801 Pt IV level 3 (>2kV spikes)

Environmental

Operating limits

–10° to 55°C (14° 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

EMC

Emissions

Meets requirements of EN50081-2

Immunity

Meets requirements of EN50082-2

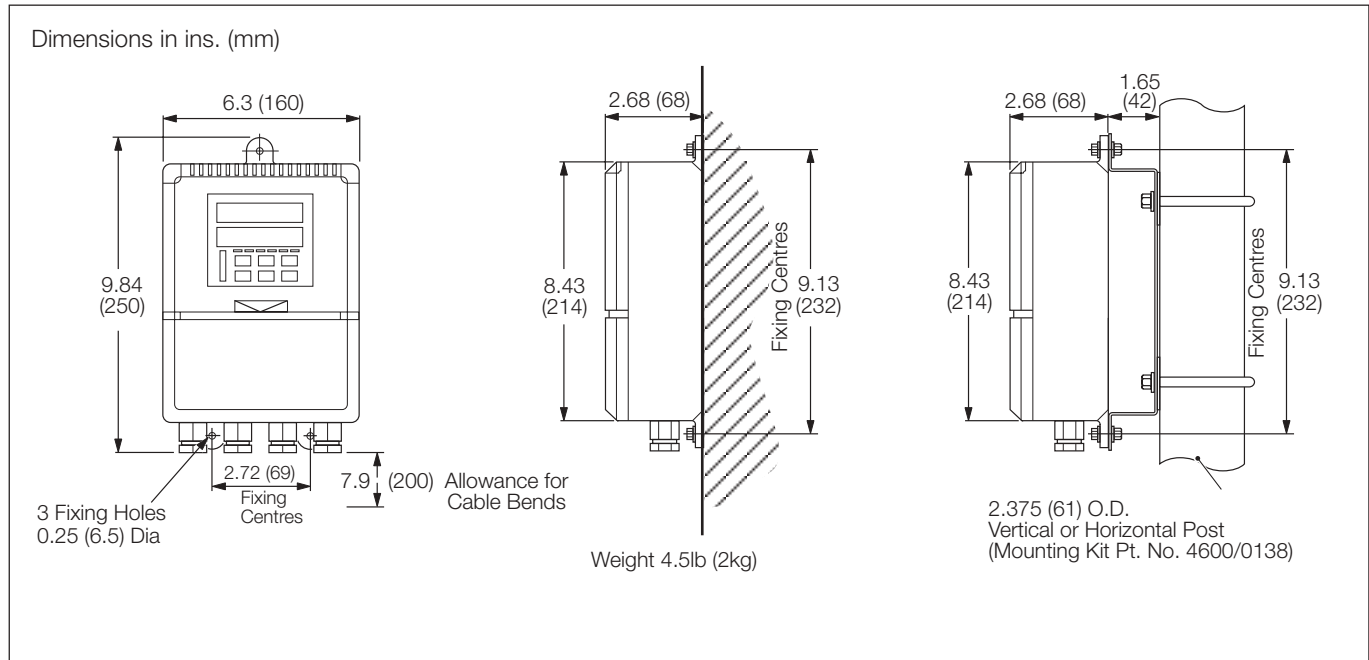
Design and Manufacturing Standards

CE

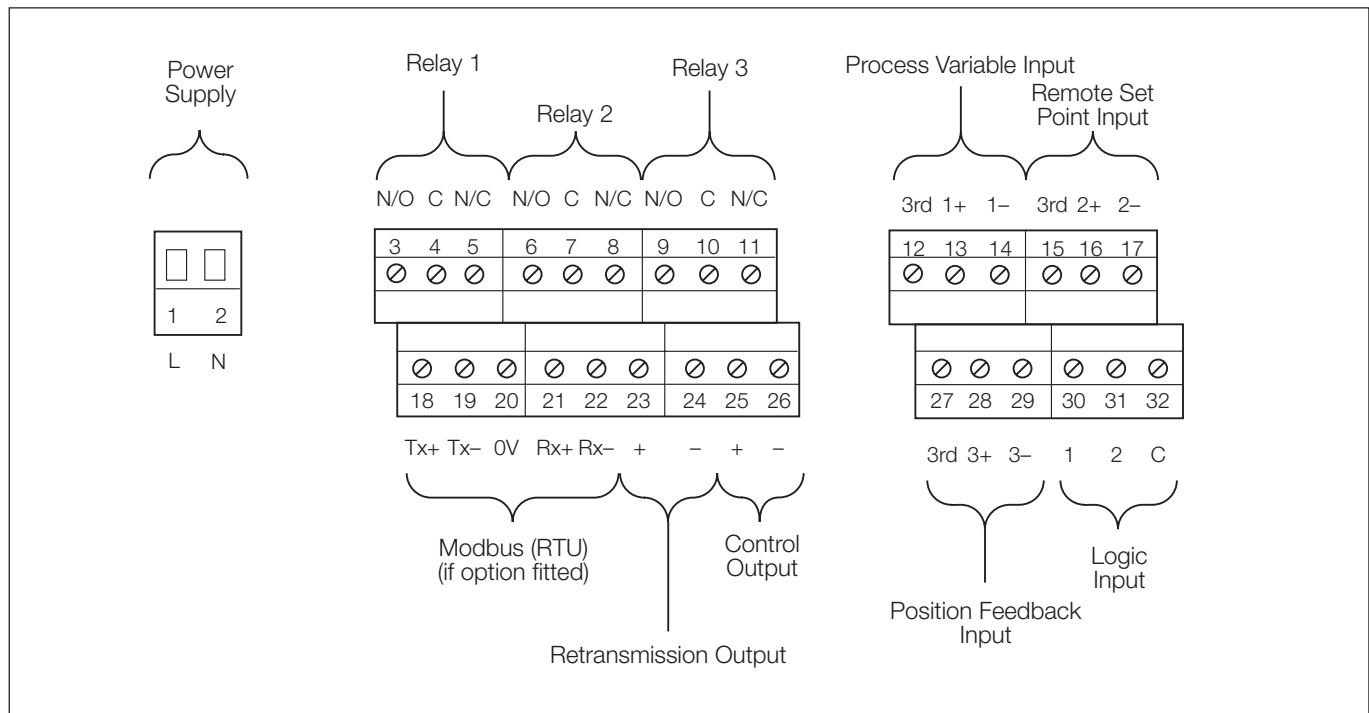
CSA

CSA/FM Class 1 Div.2 Hazardous Area

Dimensions



Electrical Connections



Ordering Information

COMMANDER 310 Wall-/Pipe-mount Universal Process Controller	C310 /X	X	X	X /	XXXX
Option Board					
None	0	0			
RS485 Modbus Communications	0	1			
Power Supply					
115V AC (NPT fitted with blanking plugs)				1	
230V AC (M20 fitted with cable glands)				2	
115V AC (M20 fitted with cable glands)				4	
230V AC (NPT fitted with blanking plugs)				5	
Build					
Standard					0
CSA approved (pending)					1
CSA/FM Cl.1 Div. 2					3
Programming/Special Features					
Configured to factory standard					STD
Configured to customer detail					CUS
Agreed special features					SPXX

Instrument Coding Example

C310 / 01 1 1 / STD

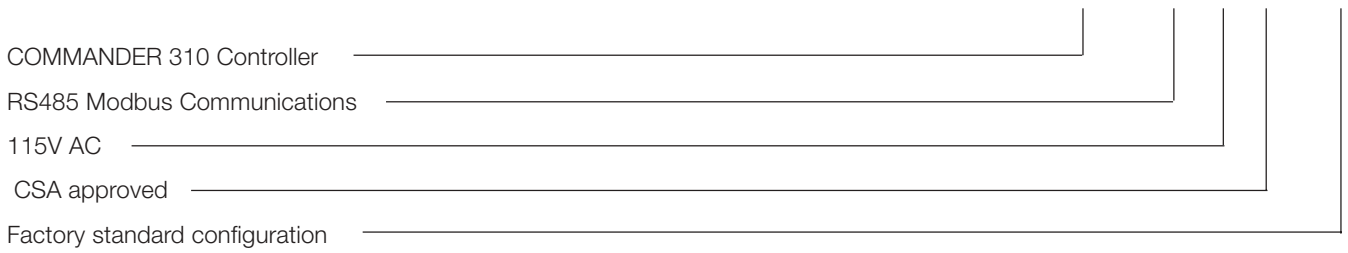


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