Specification DataFile

■ **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

■ **One-shot autotune**
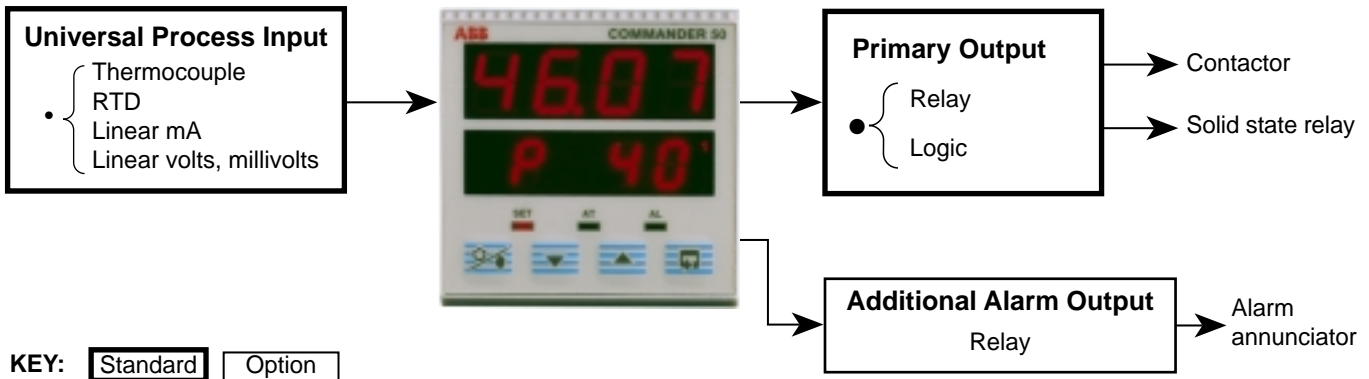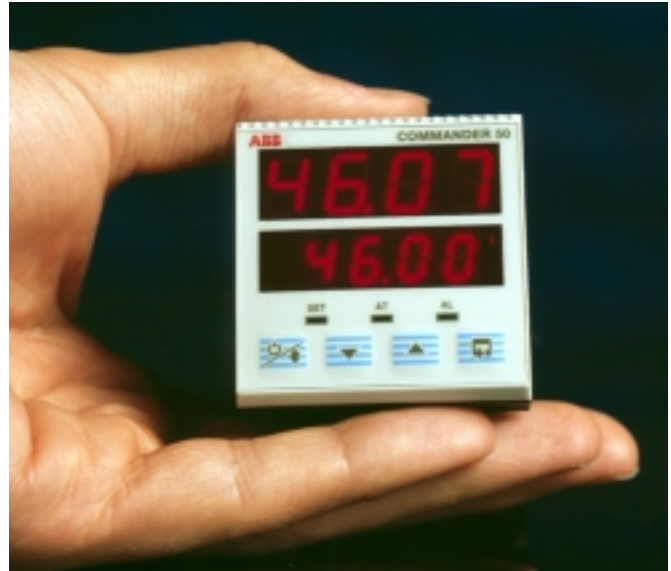– automatic setting of optimum PID values

COMMANDER 50 –
the $^1/_{16}$ DIN controller to suit
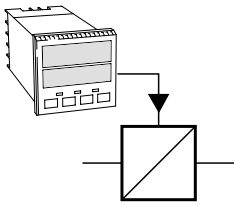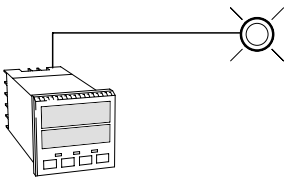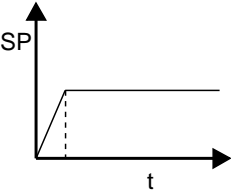*your simplest applications*

ABB Instrumentation

ABB

COMMANDER 50

The COMMANDER 50 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 COMMANDER 50 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.

Universal Process Input
- Thermocouple
- RTD
- Linear mA
- Linear volts, millivolts

Primary Output
- Relay
- Logic

→ Contactor

→ Solid state relay

Additional Alarm Output
Relay

→ Alarm annunciator

KEY: Standard   Option

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 COMMANDER 50 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 COMMANDER 50 can be configured to ramp up to the new set point over a preset period of time.

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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 (0.39inches)
            lower 8mm (0.31inches)

Configuration

User defined via front panel and internal links.

Analog Inputs

Single universal process input.

Type

Universally Configurable for:
Thermocouple (THC)
Resistance Thermometer (RTD)
Linear Millivolt
Linear Current
Linear D.C. 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 – 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

Outputs

Primary output (fitted as standard)

User configurable as either:
Relay:
SPDT 2A 120/240Vac
– or –
TTL Logic (SSR Drive):
Digital >4.2Vd.c. for
Min load: 1k
Not isolated from input

Output functions

User configurable as either:
On/Off control output
Time proportioning PID control output

Option

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

Electrical

Voltage:

90-264 V a.c. 50/60 Hz

Power consumption:

< 4VA

Environmental

Operating limits

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

Temperature stability

< 0.01% of span /°C change in ambient temperature

Housing dust/water protection

Front face:	IP65/NEMA3
Rear Case:	IP20

RF protection

Susceptibility:	EN50082-2:1992
Emissions:	prEN50081-2:1994

Design and manufacturing standards

CE Mark

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

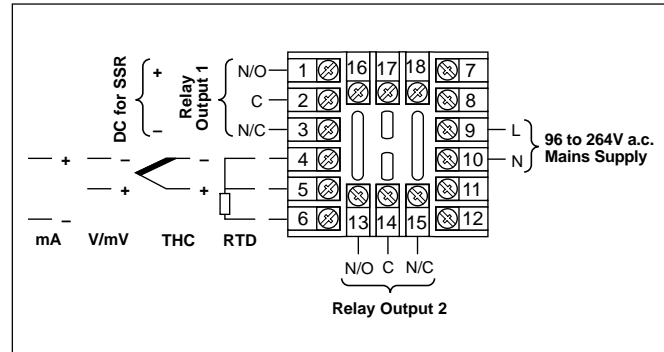| THC Type Per NBS125 & IEC584	°C Min.	°C Max.	°F Min.	°F Max.
Type R	0	1650	32	3002
Type S	0	1649	32	3000
Type J	0	205.4	32	401.7
	0	450	32	842
	0	761	32	1401
Type T	−200	262	−328	503
	0	260.6	32	501
Type K	−200	760	−328	1399
	−200	1373	−328	2503
Type L	0	205.7	32	402.2
	0	450	32	841
	0	762	32	1403
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.

Dimensions

Dimensions in mm (inches)

Panel cut out dimensions $45^{+0.6}_{-0} \times 45^{+0.6}_{-0}$ ($1.77^{+0.03}_{-0} \times 1.77^{+0.03}_{-0}$)

Weight: 200g approx.
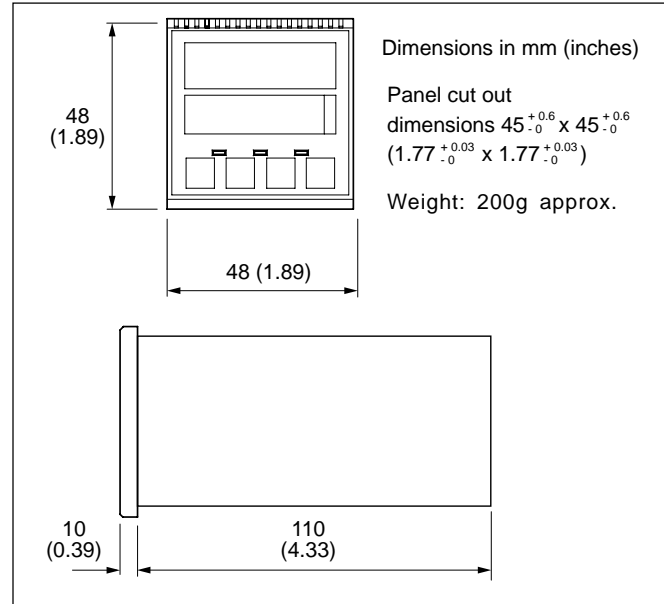
Wiring Connections

Ordering Guide

COMMANDER 50 Controller/Alarm unit		C50	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			
Special Features	None						0	0	0

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