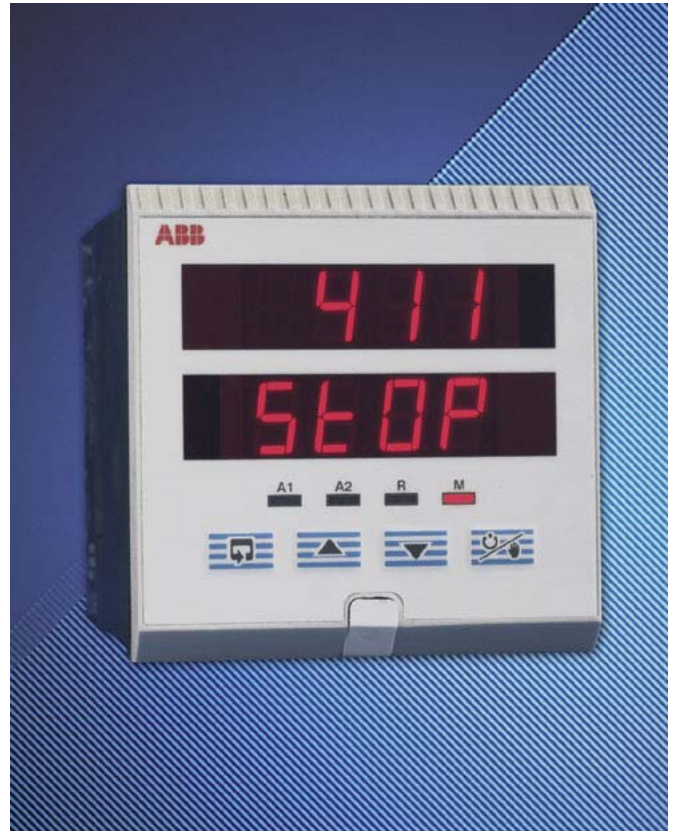


- **Boundless motorized valve controller**
 - no need for slidewire feedback; improves reliability
- **Two sealed 5A control relays**
 - suitable for direct connection to the valve, reducing installation costs
- **Universal process input with integral 2-wire transmitter power supply**
 - direct connection for any process signal
- **Retransmission of process variable**
 - analog output for recorder or datalogger
- **IP66/NEMA4X front face**
 - ideal for use in the harshest environments
- **Quick code, front face or PC configuration**
 - easy operation and commissioning using our Windows™-based software
- **RS485/Modbus serial communication**
 - SCADA, PLC or open system integration



V250
– dedicated 1/4 DIN controller for motorized valves

V250

The V250 Valve Position controller is a dedicated, single loop controller designed for direct control of motorized valves.

Universal input and integral transmitter power supply ensure that the V250 has the capabilities to measure a wide range of process signals such as temperature, pressure, flow and level.

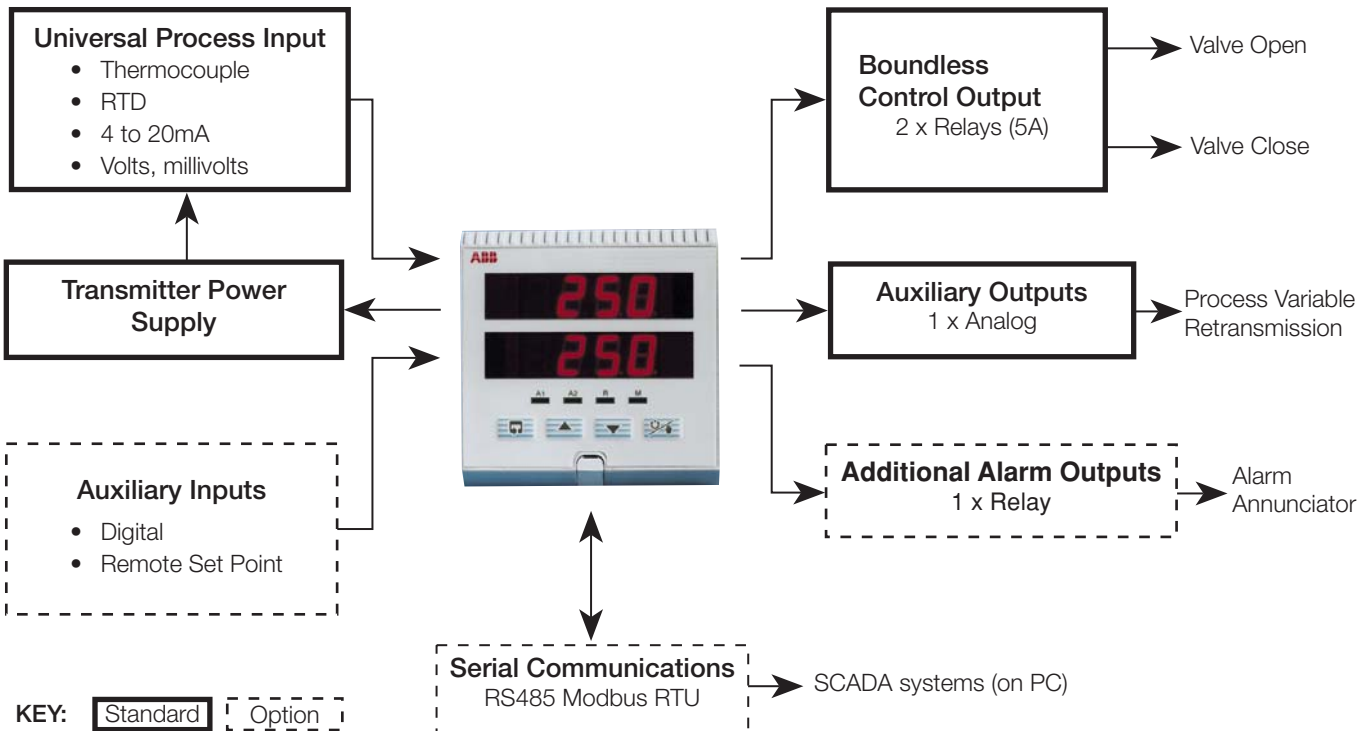
Two 5A relays are fitted as standard for either direct control of the positioner or via intermediate relays plus retransmission of the process variable for connection to a recorder or datalogger. Further I/O capabilities can be added, such as an alarm relay, remote set point and digital input, to suit the application.

The configuration of the V250 is achieved by moving the security switch and entering a simple code from the front panel keys or via our PC configuration package. No passwords, no input links, no complications.

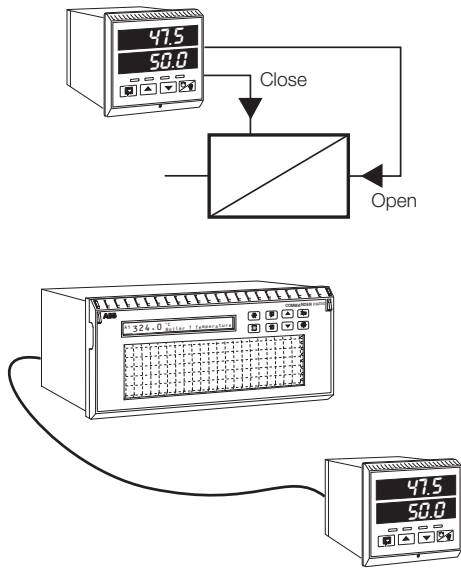
With IP66/NEMA4X front panel protection and superior RF immunity as standard the V250 has been designed to control reliably in the harshest of today's industrial environments.



Process Connections



Applications

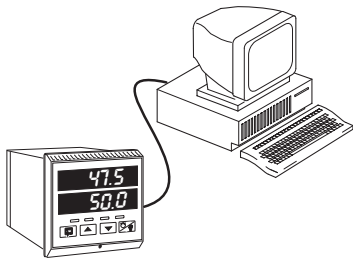


PID Control

Boundless control of an electrically-positioned valve with a travel time between 10 and 5000s using in-built 5A relays. The V250 gives pulsed outputs to the valve which are based on the difference in Process Variable and Set Point. The V250 signals the direction and time of travel to the valve. The controller does not require information on the absolute regulator position but uses the PV inputs as its feedback. The deadband setting prevents the valve from hunting.

Retransmission

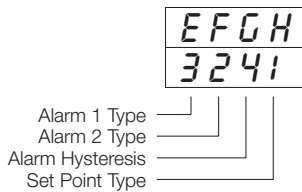
As standard the V250 has a 4 to 20mA retransmission output of the process variable for connection to a chart recorder, datalogger or PLC.



PC Configuration

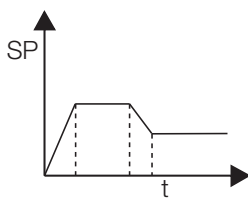
To make configuration of the V250 quicker and simpler, a Windows-based configuration software package is available. The V250 is supplied with an in-built PC configurator port as standard.

Configurations can be saved and downloaded to other instruments and a printout generated.



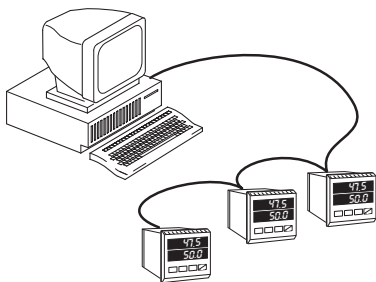
Quick Code Setting

A simple 4-digit code enables all standard parameters to be set from the front face.



Ramp/Soak Set Point Profiles

The ramp/soak facility available on every V250 provides for a single program, four-segment profile. This facility also includes guaranteed ramp/soak, repeat program, skip and reset features.



RS485/Modbus

Fitted with an optional RS485 serial communication board, the V250 can communicate with PLCs and SCADA systems using the Modbus protocol.

Specification

Summary

PI, PID single loop, valve position controller
Fully user configurable
NEMA4X/IP66
PC configuration

Operation

Display

High-intensity 7-segment, 2 x 4-digit LED display
Display range -999 to +9999
Display resolution ± 1 digit
Display height 14mm (0.56 in.)

Configuration

User-defined via front panel or via PC configurator

Control Functions

Control types

P+I or P+I+D Boundless

Valve travel time

10 to 5000s

Adjustable deadband (engineering units)

-999 to +9999

Control terms

P = 0.1 to 999.9%

I = 1 to 7200s

D = 0.1 to 999.9s

Set points strategies

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

Standard Build

Relay output

Two relays with arc suppression components included as standard (SPDT) - 5A @ 115/230V AC, 5A @ 24V DC

Logic output

18V DC at 20mA
Min. load 400 Ω

PV retransmission

Analog, configurable in the range of 4 to 20mA
Max. load 15V (750 Ω at 20mA)
Accuracy $\leq 0.25\%$ of span

Analog Inputs

Number

One standard process variable
One optional remote set point input

Input sampling rate

250ms per channel

Type

Universally configurable
Channel 1 Thermocouple (THC)
Resistance Thermometer (RTD)
Millivolt
Current
DC voltage
Channel 2 4 to 20mA

Input impedance

mA 100 Ω
mV, V >10M Ω

Linearizer functions

Programmable for standard inputs:
 $\sqrt{\quad}$, 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 $^{\circ}$ C/ $^{\circ}$ C change in ambient temperature

Input protection

Common mode isolation >120dB at 50/60Hz with 300 Ω imbalance
Series mode rejection >60dB 50/60Hz

Transmitter power supply

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

Optional I/O specification

Relay output

SPDT 5A @ 115/230V AC

Digital input

Type Volt-free
Minimum pulse 250ms

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, 100 Ω nominal input impedance
Preset to process variable engineering units

Physical

Size

96 wide x 96 high x 122.5mm deep
(3.78 in. wide x 3.78 in. high x 4.82 in. deep)

Weight

520g (1.1 lb) approx.

Electrical

Voltage

85 to 265V AC (50/60Hz)
24V DC

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

IP66 (NEMA4X), case rear IP20

EMC

Emissions and Immunity

Meets requirements of IEC 61326 for an Industrial Environment

Design and manufacturing standards

Designed to meet CSA requirements
CE Mark

Electrical safety

EN61010

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 (3.6°F) [above 200°C (392°F)] *
E	-100 to 900	-140 to 1650	0.25% or ±0.5°C (0.9°F)
J	-100 to 900	-140 to 1650	0.25% or ±0.5°C (0.9°F)
K	-100 to 1300	-140 to 2350	0.25% or ±0.5°C (0.9°F)
N	-200 to 1300	-325 to 2350	0.25% or ±0.5°C (0.9°F)
R	-18 to 1700	0 to 3000	0.25% or ±1.0°C (1.8°F) [above 300°C (572°F)] *
S	-18 to 1700	0 to 3000	0.25% or ±0.5°C (0.9°F) [above 200°C (392°F)] *
T	-250 to 300	-400 to 550	0.25% or ±0.5°C (0.9°F)

* For B, R and S thermocouples, performance accuracy is not guaranteed below value stated

Min. span below zero Type T 70°C (126°F) Type N 105°C (189°F) THC standards DIN 43710 IEC 584

RTD	Maximum Range °C	Maximum Range °F	Accuracy (% of reading)**
Pt100	-200 to 600	-325 to 1100	0.25% or ±0.5°C (0.9°F)

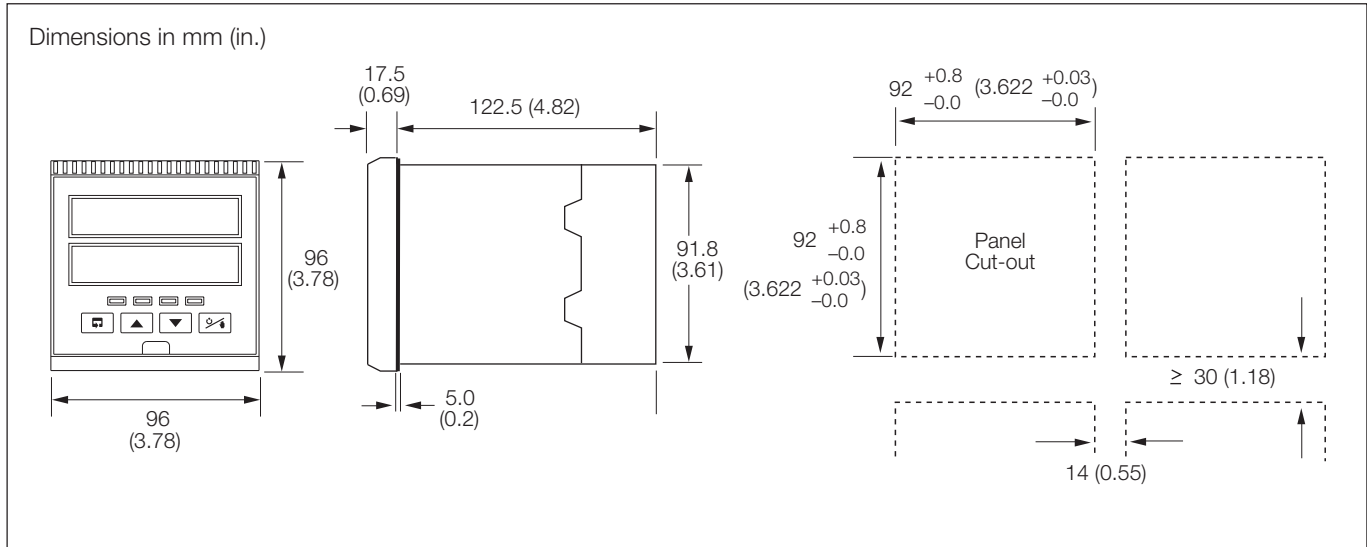
** RTD, 3-wire platinum, 100Ω per DIN 43760 standard (IEC 751), with range of 0 to 400Ω

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

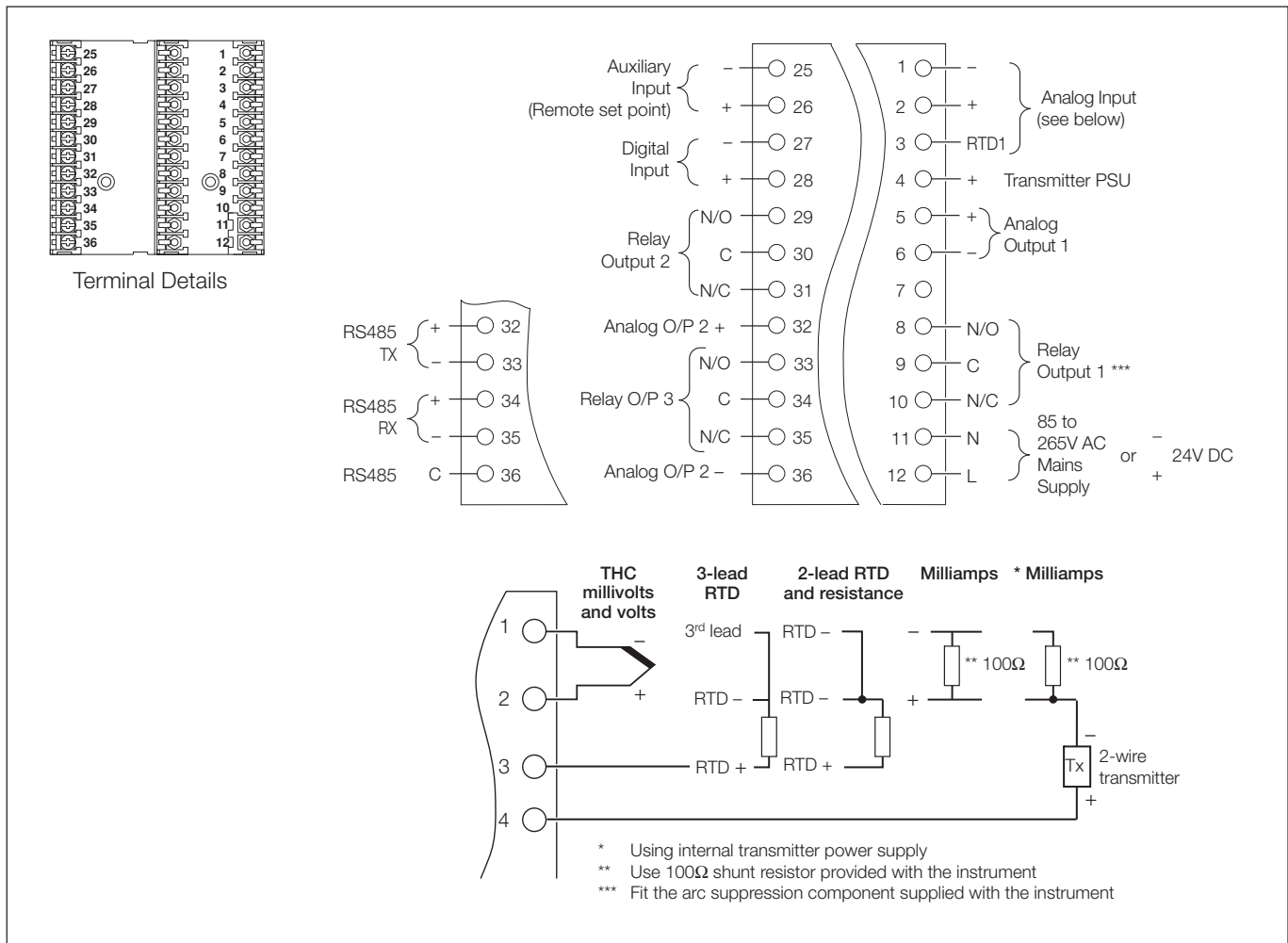
Square Root Input	Range	Accuracy (% of reading)***
Milliamps	4 to 20mA	0.25% or ±2μA

*** Below input of 4.64mA (20% flow) the input is linear

Overall Dimensions



Electrical Connections



Ordering Information

V250 1/4 DIN Motorized Valve Controller	V250	/	X	X	X	X	/	X	X	X	X		
Options													
Standard *			0	1									
1 additional alarm relay + 1 digital input + remote set point 4 to 20mA			0	2									
1 digital input + remote set point + RS485/Modbus			0	3									
Power Supply													
85V to 265V AC								0					
24V DC								1					
Build													
ABB Standard											0		
Programming/Special Features													
Configured to factory standard										S	T	D	
Configured to customer requirements										C	U	S	
Special features										S	P	X	X

*As standard the V250 is fitted with 2 relays (open/close), 4 to 20mA retransmission, universal input and transmitter power supply.

Accessories

PC Configuration Kit (part no. C100/0700)

Licensing, Trademarks and Copyrights

Modbus™ is a trademark of Modicon, Inc.

Windows™ is a trademark of the Microsoft Corp.

ABB has Sales & Customer Support
expertise in over 100 countries worldwide

www.abb.com

The Company's policy is one of continuous product
improvement and the right is reserved to modify the
information contained herein without notice.

Printed in UK (08.07)

© ABB 2007



ABB Limited
Howard Road, St Neots
Cambridgeshire
PE19 8EU
UK
Tel: +44 (0)1480 475321
Fax: +44 (0)1480 217948

ABB Inc.
125 E. County Line Road
Warminster
PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183