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
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.
**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 \(>100\text{M}\Omega\)
- Volts \(>47\text{K}\Omega\)
- Current \(<4.7\Omega\)

**Lineizer functions**
Automatic lineairisation 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: \(>120\text{dB}\) at 50/60Hz with balanced lead.
- Series mode rejection: \(>500\%\) of span at 50/60Hz.

**Accuracy**
- Measurement error: \(\pm 0.25\%\) of span \pm 1LSD
- Linearizer: Typically \(\pm 0.2\) °C
- Display range: \(-19999\) to \(+9999\)
- CJC accuracy: \(<\pm 0.05\) °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 \(>4.2\text{Vd.c.}\) 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**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Min. Value</th>
<th>Max. Value</th>
<th>Min. Value</th>
<th>Max. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>mV</td>
<td>0</td>
<td>50</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>V</td>
<td>0</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>mA</td>
<td>0</td>
<td>20</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>
### Temperature Limits

<table>
<thead>
<tr>
<th>THC Type</th>
<th>°C Min.</th>
<th>°C Max.</th>
<th>°F Min.</th>
<th>°F Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type R</td>
<td>0</td>
<td>1650</td>
<td>32</td>
<td>3002</td>
</tr>
<tr>
<td>Type S</td>
<td>0</td>
<td>1649</td>
<td>32</td>
<td>3000</td>
</tr>
<tr>
<td>Type J</td>
<td>0</td>
<td>205.4</td>
<td>32</td>
<td>401.7</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>450</td>
<td>32</td>
<td>842</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>761</td>
<td>32</td>
<td>1401</td>
</tr>
<tr>
<td>Type T</td>
<td>−200</td>
<td>262</td>
<td>−328</td>
<td>503</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>260.6</td>
<td>32</td>
<td>501</td>
</tr>
<tr>
<td>Type K</td>
<td>−200</td>
<td>760</td>
<td>−328</td>
<td>1399</td>
</tr>
<tr>
<td></td>
<td>−200</td>
<td>1373</td>
<td>−328</td>
<td>2503</td>
</tr>
<tr>
<td>Type L</td>
<td>0</td>
<td>205.7</td>
<td>32</td>
<td>402.2</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>450</td>
<td>32</td>
<td>841</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>762</td>
<td>32</td>
<td>1403</td>
</tr>
<tr>
<td>Type B</td>
<td>100</td>
<td>1842</td>
<td>211</td>
<td>3315</td>
</tr>
<tr>
<td>Type N</td>
<td>0</td>
<td>1399</td>
<td>32</td>
<td>2550</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>800</td>
<td>32.0</td>
<td>1471</td>
</tr>
<tr>
<td>Type RTD</td>
<td>−100.9</td>
<td>100</td>
<td>−149.7</td>
<td>211.9</td>
</tr>
<tr>
<td></td>
<td>−200</td>
<td>206</td>
<td>−328</td>
<td>402</td>
</tr>
<tr>
<td></td>
<td>−100.9</td>
<td>537.3</td>
<td>−149.7</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>100.9</td>
<td>32</td>
<td>213.6</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>300</td>
<td>32</td>
<td>571</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>800</td>
<td>32.0</td>
<td>1471</td>
</tr>
</tbody>
</table>

**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: $45.0 	imes 45.0$ (1.77" x 1.77")
  - Weight: 200g approx.

### Wiring Connections

#### COMANDER 50 Controller/Alarm unit

<table>
<thead>
<tr>
<th>Language (for manuals only)</th>
<th>English</th>
<th>French</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Types</td>
<td>Universal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output 1</td>
<td>Relay/Logic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output 2</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Features</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

© ABB 1998

Printed in UK (10.98)