Precaution
1. Please hold the plastic terminal when installing SCD-LED to prevent electrostatic discharge (ESD).
2. Prevent dust or metallic debris from falling into the device and cause malfunction. **DO NOT** modify or uninstall SCD-LED without being permitted. **DO NOT** use empty terminals.
3. When installing SCD-LED, please make sure the power of SCD main unit is switched off and insert SCD-LED into the correct slot on SCD main unit.
4. Make sure you install SCD-LED correctly before switching on the power; otherwise serious damage may occur.
5. **DO NOT** touch the terminals or repair the device when the power is on; otherwise an electric shock may occur.

**Product Outline & Dimension**

**Electrical Specifications**

- **Input power**: DC +5V
- **Power consumption**: Max. 0.5W
- **Display**: Single row 7-segment LED display, two 4 bits
- **Keys**: 4 keys for selecting, changing pages and tuning
- **Terminal connection**: Can only be inserted into the “Display and Setup Unit” slot on SCD main unit

**Setting up Parameters**

- **Switching modes**: SCD-LED is in “operation mode” when the power is switched on, Press \( \text{V} \) in the regulation mode or initial setting mode to return to the operation mode.
- **PV/SV**: Displaying the present value and set value. Use \( \text{V} \) to change the set value.

How to set up: Use \( \text{V} \) in the three modes to select the parameter to be set up and \( \text{V} \) to modify the settings. Press \( \text{V} \) to save the setting.

How to switch modes by keys and set up parameters:

<table>
<thead>
<tr>
<th>Regulation Mode</th>
<th>Operation Mode</th>
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**Types of Input Sensors & Temperature Range**

1. Set up input sensor: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “initial setting mode” and select an input sensor (see Table 1).
2. Set up temperature range: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “initial setting mode” to set up the temperature range.
3. Set up the position of decimal point: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “operation mode”. The position of decimal point will change the temperature range.

The screen displays only 4 digits; therefore, you have to set “0” in this parameter if you wish to display values bigger than 999 or smaller than -99. The setting will not be saved. Default = 1.

**Product Outline & Dimension**

**Electrical Specifications**

- **Input power**: DC +5V
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- **Display**: Single row 7-segment LED display, two 4 bits
- **Keys**: 4 keys for selecting, changing pages and tuning
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**Types of Input Sensors & Temperature Range**

1. Set up temperature range: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “initial setting mode” and select an input sensor (see Table 1).
2. Set up temperature range: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “initial setting mode” to set up the temperature range.
3. Set up the position of decimal point: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “operation mode”. The position of decimal point will change the temperature range.

The screen displays only 4 digits; therefore, you have to set “0” in this parameter if you wish to display values bigger than 999 or smaller than -99. The setting will not be saved. Default = 1.

**Types of Input Sensors & Temperature Range**

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2. Set up temperature range: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “initial setting mode” to set up the temperature range.
3. Set up the position of decimal point: Enter parameter \( \text{V} \) (see “Setting up Parameters” section for details) in “operation mode”. The position of decimal point will change the temperature range.

The screen displays only 4 digits; therefore, you have to set “0” in this parameter if you wish to display values bigger than 999 or smaller than -99. The setting will not be saved. Default = 1.
Parameter $P_T$ and $P_R$ can be set up when parameter $c_1$ is set as “0”. $P_T$ can be set up when $c_2$ is not “0”.

Parameter $P_{T2}$ and $P_{R2}$ (control cycle for output 1) can be set up when parameter $c_3$ is set as “0” (heating) or “0” (cooling) output. $P_{T2}$ (control cycle for output 2) can be set up when parameter $c_3$ is set as “T” (heating) or “C” (cooling) output. Parameter $P_{T3}$ and $P_{R3}$ can be set up when parameter $c_4$ and $c_5$ are set as “T” (heating) or “C” (cooling) output. (The settings in $P_{T3}$ and $P_{R3}$ have to be different.)

For ON/ OFF Control Application:
1. Set up 2 outputs: Enter parameter $c_3$ and $c_4$ in “initial setting mode” (see “Setting up Parameters” section for details). Set up one of the two parameters as “DH” or “LH” of control output.

2. Set up control type: Enter parameter $c_3$ in “initial setting mode” (see “Setting up Parameters” section for details) and set it up as “DH” (ON/OFF) control.

3. Set up parameters in “regulation mode”:
   - Parameters $P_{T2}$ and $P_{R2}$ (hysteresis for output 1) can be set up when parameter $c_3$ is set as “DH” (heating) or “C” (cooling) output. $P_{T4}$ (hysteresis for output 2) can be set up when parameter $c_4$ is set as “DH” (heating) or “C” (cooling) output. You can only set $P_{T2}$ when $c_3$ and $P_{T4}$ are set as $c_3$, $P_{R2}$ or $P_{R4}$ at the same time.
   - Parameter $c_5$ can be set up when parameter $c_2$ and $c_3$ are set as control output, and the settings in $c_2$ and $c_3$ are different. e.g. output 1 is “DH” (heating), and output 2 is “C” (cooling).

For Manual Control Application:
1. Set up 2 outputs: Enter parameter $c_3$ and $c_4$ in “initial setting mode” (see “Setting up Parameters” section for details). Set up one of the two parameters as “DH” or “LH” of control output.

2. Set up control type: Enter parameter $c_3$ in “initial setting mode” (see “Setting up Parameters” section for details) and set it up as “DH” (manual) control.

3. Set up parameters in “regulation mode”:
   - Parameters $P_{T2}$ and $P_{R2}$ (control cycle for output 1) can be set up when parameter $c_3$ is set as “DH” (heating) or “C” (cooling) output. $P_{T4}$ (control cycle for output 2) can be set up when parameter $c_4$ is set as “DH” (heating) or “C” (cooling) output. $P_{T5}$ and $P_{T6}$ (in “operation mode”): $P_{T5}$ can be set up when parameter $c_3$ is set as “DH” (heating) or “C” (cooling) output.

For Programmable PID Application:
1. Set up 2 outputs: Enter parameter $c_3$ and $c_4$ in “initial setting mode” (see “Setting up Parameters” section for details). Set up one of the two parameters as “DH” or “LH” of control output.

2. Set up control type: Enter parameter $c_3$ in “initial setting mode” (see “Setting up Parameters” section for details) and set it up as “P” (programmable) control.

3. Set up parameters in “regulation mode”:
   - Parameter $P_{T3}$ and $P_{R3}$.
   - Parameter $P_{T4}$ and $P_{R4}$ can be set up when parameter $c_3$ is set as “0”.
   - Parameter $P_{T5}$ and $P_{T6}$ (control cycle for output 1) can be set up when parameter $c_3$ is set as “DH” (heating) or “C” (cooling) output. $P_{T5}$ (control cycle for output 2) can be set up when parameter $c_4$ is set as “DH” (heating) or “C” (cooling) output. Parameter $P_{T6}$ and $P_{R6}$ can be set up when parameter $c_2$ and $c_3$ are set as “DH” (heating) or “C” (cooling) output. (The settings in $P_{T6}$ and $P_{R6}$ have to be different.)
   - Parameter $P_{T7}$ and $P_{R7}$ (in “operation mode”): Can be set up when parameter $c_3$ is set as “0” or “1”.

For Proportional Output Application: In this application, output 1 has to be analog output.
1. Set up output function: Enter parameter $c_3$ in “initial setting mode” (see “Setting up Parameters” section for details) and set it up as “P” (proportional) output.

2. Set up parameters: In “regulation mode”.
   - Parameter $P_{T8}$.

For Upper/Lower Limits of Control Output:
1. Set up upper limit: Enter parameter $c_3$ in “regulation mode” (see “Setting up Parameters” section for details). Range: $0$ — upper limit %.

2. Set up lower limit: Enter parameter $c_3$ in “regulation mode” (see “Setting up Parameters” section for details). Range: $0$ — upper limit %.

For Alarm Application:
1. Set up output function (only when there is group INB): Enter parameter $c_3$ in “initial setting mode” (see “Setting up Parameters” section for details) and select the function you desire.

2. Set up alarm type: Enter parameter $c_{29}$ (with INB) or $c_{33}$ and $c_{35}$ (without INB) in “initial setting mode”. See Table 2 for more details on the alarm output.

3. Set up parameters: In “operation mode” (in “operation mode”).
   - Parameter $c_{30}$ and $c_{34}$ can be set up when there is group INB.
   - Parameter $c_{31}$, $c_{32}$, $c_{36}$ and $c_{37}$ can be set up when there is no group INB.

4. Set up delay alarm output: Enter parameter $c_{38}$ in “regulation mode” (unit: second). The alarm will be enabled only when the temperature reaches the alarm output condition, and the condition remains until the delay time is reached.

SCD main unit offers 2 groups of alarm output, each with 12 alarm modes in the initial setting mode. When SV is higher than or lower than 5V, the alarm output will be enabled. See the table in the next column for the explanations on the 12 alarm output modes.

Table 2

<table>
<thead>
<tr>
<th>SV</th>
<th>Alarm Mode</th>
<th>Alarm Output Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No alarm</td>
<td>OFF</td>
</tr>
<tr>
<td>1</td>
<td>Alarm output is enabled when the temperature reaches upper and lower limits. The alarm will be enabled when PV exceeds SV + AL-H or falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Alarm output will be enabled when the temperature reaches the upper limit. The alarm will be enabled when PV exceeds SV + AL-H.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alarm output will be enabled when the temperature reaches the lower limit. The alarm will be enabled when PV falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Alarm output will be enabled when PV is between SV + AL-H and SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Alarm output will be enabled when PV exceeds SV + AL-H or falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Alarm output will be enabled when PV exceeds SV + AL-H.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Alarm output will be enabled when PV falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Upper/lower limit standby alarm: The alarm will be enabled when PV reaches SV and further exceeds SV + AL-H or falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Upper limit standby alarm: The alarm will be enabled when PV reaches SV and further exceeds SV + AL-H or falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Lower limit standby alarm: The alarm will be enabled when PV reaches SV and further exceeds SV + AL-H or falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Upper limit hysteresis alarm: The alarm will be enabled when PV exceeds SV + AL-H or falls below SV – AL-L.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Lower limit hysteresis alarm: The alarm will be enabled when PV falls below SV – AL-L.</td>
<td></td>
</tr>
</tbody>
</table>

3. How does it work: The function allows a SCD main unit to copy its parameters (including the values set in the parameter and communication settings) to another SCD main unit through SCD-LED. Follow the steps below:
   a. Insert SCD-LED into the SCD main unit to be copied. Enter parameter $c_{39}$ in “initial setting mode” and select $c_{40}$ and SCD-LED will read the parameters in the SCD main unit. Next, you will see “on” on the screen, indicating that the copy is successful. Press $c_{41}$ to return to “operation mode” and you will see the present temperature value (PV) and set temperature value (SV).
   b. Switch off SCD and switch SCD-LED. Insert SCD-LED into another SCD main unit. Enter parameter $c_{42}$ in “initial setting mode” and select $c_{43}$. SCD-LED will write the parameters into it. Next, you will see “on” on the screen, indicating that the writing-in is successful. Press $c_{44}$ to return to “operation mode” and you will see the present temperature value (PV) and set temperature value (SV).

Table 3

<table>
<thead>
<tr>
<th>Error Message</th>
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How to Install
1. Remove all the terminal blocks on the panel.
2. Uncover the panel and insert SCD-LED to the “operation interface” slot.
3. Cover up the panel.
4. Insert the terminal blocks back to their positions.