**Introduction**

Your Anderson GK Series Temperature indicator is one model in a family of 1/8 DIN units which offers breakthrough display technology as well as easy-to-program single-line parameters. Designed to provide instant visual feedback regarding an application’s key input value, the GK Series unit not only has a 0.71” high LED display (27% larger than other 1/8 DIN units), but also the ability to change display color based on process status (programmable parameter in Operation Mode). Easy programming is made possible via a help function and a secondary legend display.

This manual will guide you through the installation and wiring of your GK Series unit with information on proper panel mounting and rear terminal layout and wiring instructions. In addition, the instrument’s operation, programming, and configuration modes are thoroughly explained. The Operation Mode provides day to day operation and allows editing of preset values. The Program Mode enables the configuration of various parameters prior to initial operation. These parameters include those for basic configuration as well as other settable features which will enhance the functionality and usability of the device.

The Configuration Mode allows selection of how outputs and special functions are utilized.

This manual also provides information on the GK Series Temperature Indicator’s alarms; transistor, relay, and linear outputs; product specifications; and ordering and warranty procedures.

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**Features**

- AWESOME 0.71” high digit LED display
- Programmable color change display based on an event
- Programmable help function and secondary legend display
- High and low alarm outputs
- Accepts most standard thermocouple types and 3 and 4 wire RTDs
- Standard outputs: two NPN transistors & one relay (optional 2nd relay)
- 250 ms sample time with 0.1% accuracy
- Optional RS-485 plug in card
- CE approved

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**ORDERING INFORMATION**

**INDEX**

- Installation
- Panel Mounting
- Wiring
- Operation
- Front Panel
- Operation Mode
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- Program Mode
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- Configuration Mode
- Appendix A
- Specifications
- General
- Ordering Information
- Warranty

**WARRANTY**

Standard products manufactured by the Company are warranted to be free from defects in workmanship and material for a period of one year from the date of shipment, and products which are defective in workmanship or material will be repaired or replaced, at the option of the Company, at no charge to the Buyer. Final determination as to whether a product is actually defective rests with the Company. The obligation of the Company hereunder shall be limited solely to repair and replacement of products that fail within the foregoing limitations, and shall be conditioned upon receipt by the Company of written notice of any alleged defects or deficiency promptly after discovery within the warranty period, and in the case of components or units purchased by the Company, the obligation of the Company shall not exceed the settlement that the Company is able to obtain from the supplier thereof. No products shall be returned to the Company without its prior consent. Products which the Company consents to have returned shall be shipped F.O.B. the Company’s factory. The Company cannot assume responsibility or accept invoices for unauthorized repairs to its components, even though defective. The life of the products of the Company depends, to a large extent, upon the type of usage thereof, and THE COMPANY MAKES NO WARRANTY AS TO FITNESS OF ITS PRODUCTS FOR SPECIFIC APPLICATIONS BY THE BUYER NOR AS TO PERIOD OF SERVICE UNLESS THE COMPANY SPECIFICALLY AGREES OTHERWISE IN WRITING AFTER THE PROPOSED USAGE HAS BEEN MADE KNOWN TO IT.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.
Awesome Model: Temperature

Follow the diagram as illustrated for proper wiring of RTD Temperature Sensors

Color codes given for Anderson pre-wired RTD Temperature Sensor

Jumper must be in place from Terminal 1 to Terminal 2

Awesome Model: DC Process

Follow the diagram as illustrated for proper wiring of EXTERNALLY POWERED mA Sensors

CAUTION: Remove any factory installed jumper going from Terminal 1 to Terminal 5 - Not needed for this wiring configuration

Awesome Model: DC Process

Follow the diagram as illustrated for proper wiring of INTERNALLY POWERED mA Sensors

NOTE: Jumper going from Terminal 1 to Terminal 5 must be present for proper operation

NOTE: All model DC Process Awesome Indicators are supplied with on-board loop power capability
INSTALLATION

PANEL MOUNTING

Mounting Grooves

The instrument can be mounted in a panel with a thickness of up to 6mm. The cutout(s) should be made based on the recommended panel opening illustrated in the drawing above.

Insert the unit in the panel through the cutout. Ensure that the panel gasket is not distorted and the instrument is positioned squarely against the panel. Slide the mounting clamp into place on the instrument, as shown to the left, and push it forward until it is firmly in contact with the rear face of the mounting panel and the tabs on the bracket arm are seated in the mounting grooves on the side of the unit.

The electronic components of the instrument can be removed from the housing after installation without disconnecting the wiring. To remove the components, grip the side edges of the panel and pull the instrument forward. Take note of orientation of the unit for subsequent replacement in the housing.

APPENDIX A

SPECIFICATIONS

Sensor Input
Types: B, J, K, N, S, and T Thermocouples, 3 wire and 4 wire RTDs
Accuracy: ± 0.1% of span
Sample Rate: 250 ms
Resolution: 14 bits
Sensor Break: Detected within 2 seconds

Control Inputs
Type: Sinking, Edge Sensitive
Logic: Low ≤ 2.0 VDC, High ≥ 3.0
Impedance: 4.7 KΩ to Voltage - Sourcing
Response Time: 25 ms
Function: Programmable

Outputs
Solid State: NPN open collector, 30 VDC max, 100 mA max.
Relay: SPDT, 5A resistive @ 110VAC
Latency: 75 μs, plus 8 ms for relay pull-in

Linear Outputs
Ranges: 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V
Accuracy: ±0.25% (mA at 250Ω, V at 2kΩ); degrades linearly to ±0.5%
Resolution: 8 bits in 250ms (10 bits in 1s typ.)
Update: Approximately 4/s
Load Impedance: mA Ranges: 500 Ω max.; V Ranges: 500 Ω min.

Approvals
General: CE
EMC Susceptibility: Complies with EN50082-1: 1992, EN50082-2: 1995
Safety: Complies with EN61010-1: 1993

Communication
Type: Serial asynchronous, UART to UART
Data Format: Open ASCII: One start bit, even parity seven data bits, one stop bit
Physical Layer: RS-485
Maximum Zones: 99
Baud Rate: Selectable from 9600, 4800, 2400, or 1200

Electrical
Supply Voltage: 90-264 VAC, 50/60 Hz, or 20-50 VAC/DC
Power Consumption: 4 Watts
Access Power Supply: 24 VDC @ 30 mA

Display
Type: Red/Green, 7 segment LED, 5 digits primary display, single digit secondary display
Height: 0.71” (18mm) primary display, 0.3” (7mm) secondary display
Annunciators: Output 1 & 2 status

Physical
Dimensions: 48mm x 96mm, 110mm deep
Mounting: Panel mount (mounting bracket supplied), 45mm x 92mm cutout
Terminals: Screw type - combination head
Front Panel Rating: NEMA 4X/IEC IP65
Case Material: GE Lexan 940
Weight: 0.95 lbs.

Environmental
Operating Temp.: 0° to 55° Celsius, 32° to 131° Fahrenheit
Storage Temp.: -20° to 60° Celsius, -4° to 176° Fahrenheit
Relative Humidity: 20% to 95% non-condensing
**INSTALLATION**

**REAR TERMINAL CONNECTIONS**

**Transistor Outputs**
Your unit comes standard with 2 NPN outputs which are activated by each of the alarms. Transistor Output 1, which is tied to Alarm 1, is on Terminal #7. Transistor Output 2, which is tied to Alarm 2, is on Terminal #9. Terminal #8 serves as the common connection for both transistor outputs.

**Relay Outputs**
Your unit comes standard with a relay output which is tied to Alarm 1. Terminal #19 is NC, Terminal #20 is common, and Terminal #21 is NO. A second relay output tied to the operation of Alarm 2 can be added as an option at the time of order or later installed in the field. Terminal #22 is NC, Terminal #23 is common, and Terminal #24 is NO.

**Sensor Inputs**
For a thermocouple, the positive leg of the sensor is connected to Terminal #3 and the negative leg to Terminal #4. For a 3 wire RTD, connect the resistive (A) leg of the RTD to Terminal #2 and the common (B) legs to Terminals #3 and #4. For a 4 wire RTD, connect the resistive (A) legs to Terminals #1 and #2 and the common (B) legs to Terminals #3 and #4.

**Input Power**
For an AC powered unit, Terminal #13 serves as the line or Hot side connection for AC powered units and as the positive side for DC powered units. The neutral side for AC powered units and the negative side for DC powered units are connected to Terminal #14.

**Serial Communication**
An RS-485 communication board, utilizing ASCII protocol, can be installed as an option. Terminals #16 & #17 serve as the B and A connections respectively, while Terminal #18 is connected as the common.

**Linear Output**
An option board may be installed that provides a 10 bit linear output signal relative to the Process Value. Terminal #12 is the positive side of the connection, and Terminal #10 is the negative side. The default range of the output is 4-20 mA, but can be changed via the Configuration Mode to 0-20 mA, 0-10 VDC, 2-10 VDC, 0-5 VDC, or 1-5 VDC.

**Control/Digital Inputs**
A digital input board, which utilizes Terminals #16 & #17, can be installed as an option. The input can be programmed in Configuration Mode to perform the following function:
- **Security**: When activated, the Program and Calibration Modes will not be accessible from the front panel.

Please note that this option is mutually exclusive with the RS-485 serial communication option.

**Terminals 11 & 15 are not used.**
**Key Functions**

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down</td>
<td>In Operation Mode: Used in Edit Operation to decrement the digit highlighted by the Scroll key. In Program &amp; Config Modes: Used in Edit Operation to decrement the digit highlighted by the Scroll key, if the setting is a numerical value, or present the next in the series of choices for that parameter.</td>
</tr>
<tr>
<td>Scroll</td>
<td>In All modes: Moves the unit into Edit Operation, which is indicated by the left most digit flashing. Successive presses of the key are used to move to the digit to be edited. Wrap around will occur from least significant digit to most significant digit.</td>
</tr>
<tr>
<td>Program</td>
<td>In Operation Mode: Used to move between the process value display &amp; the presets and to enter an edited preset value. Holding the key down for 3 seconds will cause the unit to enter Program Mode.</td>
</tr>
<tr>
<td>Reset</td>
<td>In Operation Mode: Resets a latched alarm if pressed while the process value is being viewed. Pressing this key while viewing the max or min value will cause those values to be reset. In Program &amp; Config Modes: No function.</td>
</tr>
<tr>
<td>Down &amp; Scroll</td>
<td>In All modes: Will abort an Edit Operation and return the preset/parameter to its previous value.</td>
</tr>
</tbody>
</table>

**Key Functions**

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down &amp; Program</td>
<td>In Config. mode: Holding down both keys for 3 seconds will cause the unit to return to Operation Mode. In Operation &amp; Program Modes: Holding down both keys for 3 seconds will cause the unit to enter Config. Mode.</td>
</tr>
</tbody>
</table>

**Display Functions**

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>In Operation Mode: Default display is the Process Value. Can be scrolled using the program key to display other Operation Mode values. If the “Help” function is enabled, this display will first show the parameter description for 3 seconds (example - page 6). In Program &amp; Config Modes: Displays the value or selection for the current parameter. If the “Help” function is enabled, this display will first show the parameter description for 3 seconds (example - page 7).</td>
</tr>
<tr>
<td>Secondary</td>
<td>In Operation Mode: Provides an alpha or numeric identification of the value on the primary display. This display is blank when the Process Value is being shown. In Program &amp; Config Modes: Provides a 1 digit alpha or numeric character which indicates which parameter is being shown on the primary display.</td>
</tr>
</tbody>
</table>

**Output 1 Usage**

Function: Determines how the transistor and relay for output 1 will operate

<table>
<thead>
<tr>
<th>Adjustment Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm 1, Non latching, Direct Action: The output will be On when Alarm 1 is active, and turn Off once the Alarm 1 condition is no longer present</td>
<td>Alarm 1, Latching, Direct Action: The output will be On when Alarm 1 is inactive, and turn Off when the Alarm 1 condition is present</td>
</tr>
<tr>
<td>Alarm 1, Latching, Reverse Action: The output will be On when Alarm 1 is active, and turn Off only when reset via the front panel</td>
<td>Logical OR of Alarm 1 &amp; 2, Direct Action: The output will be On when a logical OR condition between Alarm 1 and Alarm 2 is present</td>
</tr>
<tr>
<td>Alarm 1, Non latching, Reverse Action: The output will be On when Alarm 1 is inactive, and turn Off when the Alarm 1 condition is present</td>
<td>Logical OR of Alarm 1 &amp; 2, Reverse Action: The output will be On when a logical OR condition between Alarm 1 and Alarm 2 is not present</td>
</tr>
</tbody>
</table>

Default Value: Alarm 1, Non latching, Direct Action

**Output 2 Usage**

Function: Determines how the transistor and relay for output 2 will operate

<table>
<thead>
<tr>
<th>Adjustment Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm 1, Latching, Direct Action: The output will be On when Alarm 1 is active, and turn Off once the Alarm 1 condition is no longer present</td>
<td>Logical OR of Alarm 1 &amp; 2, Direct Action: The output will be On when a logical OR condition between Alarm 1 and Alarm 2 is present</td>
</tr>
<tr>
<td>Alarm 1, Non latching, Reverse Action: The output will be On when Alarm 1 is inactive, and turn Off when the Alarm 1 condition is present</td>
<td>Logical OR of Alarm 1 &amp; 2, Reverse Action: The output will be On when a logical OR condition between Alarm 1 and Alarm 2 is not present</td>
</tr>
</tbody>
</table>

Default Value: Alarm 2, Direct Action
### Configuration Mode Continued

#### Power Supply Frequency
**Function:** Although the instrument is designed to handle either 50 or 60 Hz inputs automatically, to ensure proper filtering of the input signal, it is necessary to set the input frequency of the primary input power.

<table>
<thead>
<tr>
<th>Adjustment Range</th>
<th>50 Hz</th>
<th>60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Value</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

#### Alarm 1 Type
**Function:** Sets the action of the alarm to one of the following choices:

<table>
<thead>
<tr>
<th>Adjustment Range</th>
<th>P-H</th>
<th>P-L</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process High: Alarm will activate when the process value equals or exceeds the Alarm 1 setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Low: Alarm will activate when the process value equals or is less than the Alarm 1 setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Alarm: Alarm 1 will be activate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default Value</th>
<th>Process High Alarm</th>
</tr>
</thead>
</table>

#### Alarm 2 Type
**Function:** Sets the action of the alarm to one of the following choices:

<table>
<thead>
<tr>
<th>Adjustment Range</th>
<th>P-H</th>
<th>P-L</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process High: Alarm will activate when the process value equals or exceeds the Alarm 2 setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process Low: Alarm will activate when the process value equals or is less than the Alarm 2 setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Alarm: Alarm 2 will be activate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Default Value</th>
<th>No Alarm</th>
</tr>
</thead>
</table>

### Operation Mode

#### Changing a Preset Value

| Default display is the process value. |

Pressing the Program Key will cause the display description to appear on the main display.*  If there is no key activity for 3 seconds, the primary display will switch back to the process value.

- **Alarm 1 Elapsed Time:** Displays the accumulated amount of time the alarm 1 condition was present. This value will continue to accumulate until it is reset by pressing the Reset Key (while the value is being displayed). The value is displayed in mm:ss up to 99 min 59 secs., then changes over to mmm.n.

- **Alarm 1 Value:** Defines the process value at or above which Alarm 1 will activate if set to Process High Alarm in Configuration Mode or the process value at or below which Alarm 1 will be active if set to Process Low Alarm in Configuration Mode. The default value will either be the input range max or min depending on whether Process High or Process Low Alarm was selected.

- **Maximum (High) Value:** Displays the maximum process value the unit has received as an input. The value can be reset (only while being displayed) by pressing the Reset Key.

- **Minimum (Low) Value:** Displays the minimum process value the unit has received as an input. The value can be reset (only while being displayed) by pressing the Reset Key.

* Parameter descriptions will not appear on the primary display if the "Help" function has been disabled.
OPERATION MODE Continued

OTHER OPERATING DISPLAYS

Over Range Display: Appears if the process value becomes higher than the input full scale value.

Under Range Display: Appears if the process value becomes lower than the input full scale value.

Sensor Break Display: Appears if the unit does not receive an input signal for two seconds.

Changing an Alarm Value

Default display is the Process Value.

From the Process Value display, scroll through the other Operation Mode values until Alarm 1 appears.*

To change the Alarm value, press the Scroll Key. If there was no key activity for 3 seconds, the Alarm value will appear (one digit description shown on secondary display); however, press the Scroll Key in order to edit. The unit will now be in Edit Operation as signified by the most significant digit flashing.**

Use the Scroll Key to move from left to right and highlight the digit that needs to be changed. Wrap around will occur from the least significant to the most significant digit.

Use the Down Key to decrement the digit until the desired value appears. The display will wrap around from 0 to 9.

After the desired digits have been changed, press the Program Key to enter the new value. The new value will appear on the main display without any flashing digits. Press the Program Key again and the parameter description will appear on the main display.

PARAMETER SEQUENCE

Input Range

Function: Selects the input sensor type, resolution, and display scale (°C or °F) by means of a code number

Adjustment Range: See table below

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Range Code</th>
<th>Range Min. (°C)</th>
<th>Range Max. (°C)</th>
<th>Range Min. (°F)</th>
<th>Range Max. (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>100</td>
<td>-200</td>
<td>1200</td>
<td>100</td>
<td>2192</td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>-128</td>
<td>111</td>
<td>-128</td>
<td>998.6</td>
</tr>
<tr>
<td>T</td>
<td>200</td>
<td>-240</td>
<td>400</td>
<td>-400</td>
<td>752</td>
</tr>
<tr>
<td></td>
<td>210</td>
<td>-128</td>
<td>211</td>
<td>-128</td>
<td>752.0</td>
</tr>
<tr>
<td>K</td>
<td>300</td>
<td>-240</td>
<td>1372</td>
<td>400</td>
<td>752</td>
</tr>
<tr>
<td></td>
<td>310</td>
<td>-128</td>
<td>311</td>
<td>-128</td>
<td>752.0</td>
</tr>
<tr>
<td>N</td>
<td>400</td>
<td>0</td>
<td>1399</td>
<td>32</td>
<td>2550</td>
</tr>
<tr>
<td>B</td>
<td>500</td>
<td>100</td>
<td>1824</td>
<td>212</td>
<td>3315</td>
</tr>
<tr>
<td>R</td>
<td>600</td>
<td>0</td>
<td>1760</td>
<td>32</td>
<td>3200</td>
</tr>
<tr>
<td>S</td>
<td>700</td>
<td>0</td>
<td>1760</td>
<td>32</td>
<td>3200</td>
</tr>
<tr>
<td>RTD</td>
<td>800</td>
<td>-200</td>
<td>800</td>
<td>-328</td>
<td>1472</td>
</tr>
<tr>
<td>3 wire</td>
<td>810</td>
<td>-128</td>
<td>811</td>
<td>-128</td>
<td>1472.0</td>
</tr>
<tr>
<td>RTD</td>
<td>900</td>
<td>-200</td>
<td>901</td>
<td>-328</td>
<td>1472</td>
</tr>
<tr>
<td>4 wire</td>
<td>910</td>
<td>-128</td>
<td>911</td>
<td>-128</td>
<td>1472.0</td>
</tr>
</tbody>
</table>

Range Trim High

Function: Adjusts the maximum range value of the input type selected

Adjustment Range: Range trim low (specified in next parameter) to range max. (specified in above table)

Default Value: Range max.

Range Trim Low

Function: Adjusts the minimum range value of the input type selected

Adjustment Range: Range min. (specified in above table) to range trim high (specified in previous parameter)

Default Value: Range min.
**CONFIGURATION MODE**

**ENTERING CONFIGURATION MODE AND BASIC OPERATION**

The Configuration Mode can be accessed from the Operation Mode by holding the Down and Program Keys for 3 seconds.

The name of the first parameter will appear on the primary display.*

Successive presses of the Program Key will scroll the display through the remaining parameters in the Configuration Mode. To exit Configuration Mode, hold the Down and Program Keys for 3 seconds.

* Parameter names will not appear on the main display if the "Help" function has been disabled in Program Mode.

**PROGRAM MODE**

**ENTERING PROGRAM MODE AND BASIC OPERATION**

The Program Mode can be accessed from the Operation Mode by holding the Program Key for 3 seconds.

The name of the first parameter will appear on the primary display.

Successive presses of the Program Key will scroll the display through the remaining parameters in the Program Mode. To exit Program Mode, hold the Program Key for 3 seconds.

* Parameter names will not appear on the main display if the "Help" function has been disabled in Program Mode.

**PARAMETER SEQUENCE**

**Retransmission Scale Minimum** (Appears only if a retransmission output has been enabled in Configuration mode)

* Function: Defines the lower end of the linear scale for the retransmission output by defining the value equated to the minimum output signal
* Adjustment Range: -19999 to 99999
* Default Value: -19999
**Program Mode Continued**

**Programming**

**Process Variable Offset**
Function: Corrects a known offset of the input in order to more accurately display the process value
Adjustment Range: -19999 to 99999
Default Value: 0.00

**Input Filter Time**
Function: Filters the input over a user definable time period to minimize the effect on the Process Value of any extraneous impulses
Adjustment Range: 0.0 (Off) to 100.0
Default Value: 2.0

**Communication Address**
Function: Defines the unique communication address of the instrument
Adjustment Range: 1 to 99
Default Value: 1

**Baud Rate**
Function: Selects the serial communication speed
Adjustment Range:
- 1200
- 2400
- 4800
- 9600
Default Value: 4800

**Display Color Change**
Function: Defines the color of the display for prior to and after the preset value is reached
Adjustment Range:
- Red: The display will always be red
- Green: The display will always be green
- Green to Red: The display will be green when no alarm condition is present. It will turn red when either alarm is active
- Red to Green: The display will be red when no alarm condition is present. It will turn green when either alarm is active
Default Value: Green to Red

**Alarm Lock**
Function: Determines whether the Alarm Values can be changed via the front panel
Adjustment Range:
- Enable: Alarm values are read only
- Disabled: Alarm values can be viewed and changed
Default Value: Enable

**Help Prompt**
Function: Determines whether the multi-character parameter name will appear on the main display for 3 seconds prior to the parameter value appearing
Adjustment Range:
- Help - Yes: Multi-character parameter descriptions will appear on the primary display. The value associated with that parameter will appear by pressing the scroll key or waiting for 3 seconds
- Help - No: Only the parameter values will appear on the primary display. The parameter can be identified by a single digit in the secondary display
Default Value: Help - Yes
Retransmission Scale Maximum (Appears only if a retransmission output has been enabled in Configuration mode)
Function: Defines the upper end of the linear scale for the retransmission output by defining the value equated to the maximum output signal
Adjustment Range: -19999 to 99999
Default Value: 99999

Process Variable Offset
Function: Corrects a known offset of the input in order to more accurately display the process value
Adjustment Range: -19999 to 99999
Default Value: 0.00

Input Filter Time
Function: Filters the input over a user definable time period to minimize the effect on the Process Value of any extraneous impulses
Adjustment Range: 0.0 (Off) to 100.0
Default Value: 2.0

Communication Address (Appears only if communication board is installed and activated)
Function: Defines the unique communication address of the instrument
Adjustment Range: 1 to 99
Default Value: 1

Baud Rate (Appears only if communication board is installed and activated)
Function: Selects the serial communication speed
Adjustment Range: 1200, 2400, 4800, 9600
Default Value: 4800

Display Color Change
Function: Defines the color of the display for prior to and after the preset value is reached
Adjustment Range:
- Red: The display will always be red
- Green: The display will always be green
- Green to Red: The display will be green when no alarm condition is present. It will turn red when either alarm is active
- Red to Green: The display will be red when no alarm condition is present. It will turn green when either alarm is active
Default Value: Green to Red

Alarm Lock
Function: Determines whether the Alarm Values can be changed via the front panel
Adjustment Range:
- Enable: Alarm values are read only
- Disable: Alarm values can be viewed and changed
Default Value: Enable

Help Prompt
Function: Determines whether the multi-character parameter name will appear on the main display for 3 seconds prior to the parameter value appearing
Adjustment Range:
- Help - Yes: Multi-character parameter descriptions will appear on the primary display. The value associated with that parameter will appear by pressing the scroll key or waiting for 3 seconds
- Help - No: Only the parameter values will appear on the primary display. The parameter can be identified by a single digit in the secondary display
Default Value: Help - Yes
**CONFIGURATION MODE**

**ENTERING CONFIGURATION MODE AND BASIC OPERATION**

The Configuration Mode can be accessed from the Operation Mode by holding the Down and Program Keys for 3 seconds.

Successive presses of the Program Key will scroll the display through the remaining parameters in the Configuration Mode. To exit Configuration Mode, hold the Down and Program Keys for 3 seconds.

* Parameter names will not appear on the main display if the "Help" function has been disabled in Program Mode.

---

**PROGRAM MODE**

**ENTERING PROGRAM MODE AND BASIC OPERATION**

The Program Mode can be accessed from the Operation Mode by holding the Program Key for 3 seconds.

Successive presses of the Program Key will scroll the display through the remaining parameters in the Program Mode. To exit Program Mode, hold the Program Key for 3 seconds.

* Parameter names will not appear on the main display if the "Help" function has been disabled in Program Mode.

---

**PARAMETER SEQUENCE**

**Retransmission Scale Minimum** (Appears only if a retransmission output has been enabled in Configuration mode)

Function: Defines the lower end of the linear scale for the retransmission output by defining the value equated to the minimum output signal.

Adjustment Range: -19999 to 99999

Default Value: -19999
OPERATION

OTHER OPERATING DISPLAYS

Over Range Display: Appears if the process value becomes higher than the input full scale value.

Under Range Display: Appears if the process value becomes lower than the input full scale value.

Changing an Alarm Value

Default display is the Process Value.

To change the Alarm value, press the Scroll Key. If there was no key activity for 3 seconds, the Alarm value will appear (one digit description shown on secondary display); however, press the Scroll Key in order to edit. The unit will now be in Edit Operation as signified by the most significant digit flashing.""

Sensor Break Display: Appears if the unit does not receive an input signal for two seconds.

Parameter Sequence

Input Range
Function: Selects the input sensor type, resolution, and display scale (°C or °F) by means of a code number
Adjustment Range: See table below

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Range Code ±°C</th>
<th>Range Min.</th>
<th>Range Max. ±°C</th>
<th>Range Min.</th>
<th>Range Max. ±°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>100</td>
<td>-328</td>
<td>32</td>
<td>329</td>
<td>998.6</td>
</tr>
<tr>
<td>T</td>
<td>200</td>
<td>-240</td>
<td>320</td>
<td>320</td>
<td>752.0</td>
</tr>
<tr>
<td>K</td>
<td>300</td>
<td>-128</td>
<td>128</td>
<td>128</td>
<td>598.6</td>
</tr>
<tr>
<td>R</td>
<td>400</td>
<td>0</td>
<td>1760</td>
<td>1760</td>
<td>3200</td>
</tr>
<tr>
<td>N</td>
<td>500</td>
<td>0</td>
<td>1824</td>
<td>1824</td>
<td>3200</td>
</tr>
<tr>
<td>B</td>
<td>600</td>
<td>0</td>
<td>1980</td>
<td>1980</td>
<td>3200</td>
</tr>
<tr>
<td>S</td>
<td>700</td>
<td>0</td>
<td>2120</td>
<td>2120</td>
<td>3200</td>
</tr>
<tr>
<td>RTD 3 wire</td>
<td>800</td>
<td>-328</td>
<td>3200</td>
<td>3200</td>
<td>998.6</td>
</tr>
<tr>
<td>RTD 4 wire</td>
<td>900</td>
<td>-328</td>
<td>3200</td>
<td>3200</td>
<td>998.6</td>
</tr>
</tbody>
</table>

Range Trim High
Function: Adjusts the maximum range value of the input type selected
Adjustment Range: Range trim low (specified in next parameter) to range max. (specified in above table)
Default Value: Range max.

Range Trim Low
Function: Adjusts the minimum range value of the input type selected
Adjustment Range: Range min. (specified in above table) to range trim high (specified in previous parameter)
Default Value: Range min.
**Configuration Mode**

**Operation Mode**

### Power Supply Frequency

**Function:** Although the instrument is designed to handle either 50 or 60 Hz inputs automatically, to ensure proper filtering of the input signal, it is necessary to set the input frequency of the primary input power.

**Adjustment Range:**

| 50 Hz | 60 Hz |

**Default Value:** 60 Hz

### Alarm 1 Type

**Function:** Sets the action of the alarm to one of the following choices:

**Adjustment Range:**

- **P.H.:** Process High: Alarm will activate when the process value equals or exceeds the Alarm 1 setting
- **P.L.:** Process Low: Alarm will activate when the process value equals or is less than the Alarm 1 setting
- **N.A.:** No Alarm: Alarm 1 will not be activated

**Default Value:** Process High Alarm

### Alarm 2 Type

**Function:** Sets the action of the alarm to one of the following choices:

**Adjustment Range:**

- **P.H.:** Process High: Alarm will activate when the process value equals or exceeds the Alarm 2 setting
- **P.L.:** Process Low: Alarm will activate when the process value equals or is less than the Alarm 2 setting
- **N.A.:** No Alarm: Alarm 2 will not be activated

**Default Value:** No Alarm

### Operation Mode

**Changing a Preset Value**

Default display is the process value.

Pressing the Program Key will cause the display description to appear on the main display.* If there is no key activity for 3 seconds, the primary display will switch back to the process value.

### ALARM 1 TYPE

**Function:** Sets the action of the alarm to one of the following choices:

**Adjustment Range:**

- **P.H.:** Process High: Alarm will activate when the process value equals or is less than the Alarm 1 setting
- **P.L.:** Process Low: Alarm will activate when the process value equals or exceeds the Alarm 1 setting
- **N.A.:** No Alarm: Alarm 1 will not be activated

**Default Value:** Process High Alarm

### ALARM 2 TYPE

**Function:** Sets the action of the alarm to one of the following choices:

**Adjustment Range:**

- **P.H.:** Process High: Alarm will activate when the process value equals or is less than the Alarm 2 setting
- **P.L.:** Process Low: Alarm will activate when the process value equals or exceeds the Alarm 2 setting
- **N.A.:** No Alarm: Alarm 2 will not be activated

**Default Value:** No Alarm

### Alarm 1 Elapsed Time

Displays the accumulated amount of time the alarm 1 condition was present. This value will continue to accumulate until it is reset by pressing the Reset Key (while the value is being displayed). The value is displayed in mm:ss up to 99 min 59 secs, then changes over to mmm.nn

### Alarm 1 Value

**Function:** Defines the process value at or above which Alarm 1 will activate if set to Process High Alarm in Configuration Mode or the process value at or below which Alarm 1 will be active if set to Process Low Alarm in Configuration Mode. The default value will either be the input range max or min depending on whether Process High or Process Low Alarm was selected.

### Alarm 2 Value

**Function:** Defines the process value at or above which Alarm 2 will activate if set to Process High Alarm in Configuration Mode or the process value at or below which Alarm 2 will be active if set to Process Low Alarm in Configuration Mode. The default value will either be the input range max or min depending on whether Process High or Process Low Alarm was selected.

---

* Parameter descriptions will not appear on the primary display if the "Help" function has been disabled.
### Key Functions

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Down</td>
<td>In Operation Mode: Used in Edit Operation to decrement the digit highlighted by the Scroll key. In Program &amp; Config. Mode: Used in Edit Operation to decrement the digit highlighted by the Scroll key, if the setting is a numerical value, or present the next in the series of choices for that parameter.</td>
</tr>
<tr>
<td>Scroll</td>
<td>In All modes: Moves the unit into Edit Operation, which is indicated by the left most digit flashing. Successive presses of the key are used to move to the digit to be edited. Wrap around will occur from least significant digit to most significant digit.</td>
</tr>
<tr>
<td>Program</td>
<td>In Operation Mode: Used to move between the process value display &amp; the presets and to enter an edited preset value. Holding the key down for 3 seconds will cause the unit to enter Program Mode. In Program Mode: Used to move from one parameter to the next and enter the edited parameter values. Holding the key down for 3 seconds will cause the unit to return to Operation Mode. In Config. Mode: Used to move from one parameter to the next and enter the edited parameter values.</td>
</tr>
<tr>
<td>Reset</td>
<td>In Operation Mode: Resets a latched alarm if pressed while the process value is being viewed. Pressing this key while viewing the max or min value will cause those values to be reset. In Program &amp; Config. Mode: No function.</td>
</tr>
<tr>
<td>Down &amp; Scroll</td>
<td>In All modes: Will abort an Edit Operation and return the preset/parameter to its previous value.</td>
</tr>
</tbody>
</table>
**INSTALLATION**

**Rear Terminal Connections**

**Transistor Outputs**
Your unit comes standard with 2 NPN outputs which are activated by each of the alarms. Transistor Output 1, which is tied to Alarm 1, is on Terminal #7. Transistor Output 2, which is tied to Alarm 2, is on Terminal #9. Terminal #8 serves as the common connection for both transistor outputs.

**Relay Outputs**
Your unit comes standard with a relay output which is tied to Alarm 1. Terminal #19 is NC, Terminal #20 is common, and Terminal #21 is NO. A second relay output tied to the operation of Alarm 2 can be added as an option at the time of order or later installed in the field. Terminal #22 is NC, Terminal #23 is common, and Terminal #24 is NO.

**Sensor Inputs**
For a thermocouple, the positive leg of the sensor is connected to Terminal #3 and the negative leg to Terminal #4. For a 3 wire RTD, connect the resistive (A) leg of the RTD to Terminal #2 and the common (B) legs to Terminals #3 and #4. It is necessary to jumper Terminals #1 and #2 for a 3 wire RTD. For a 4 wire RTD, connect the resistive (A) legs to Terminals #1 and #2 and the common (B) legs to Terminals #3 and #4.

**Input Power**
For an AC powered unit, Terminal #13 serves as the line or Hot side connection for AC powered units and as the positive side for DC powered units. The neutral side for AC powered units and the negative side for DC powered units are connected to Terminal #14.

**Serial Communication**
An RS-485 communication board, utilizing ASCII protocol, can be installed as an option. Terminals #16 & #17 serve as the B and A connections respectively, while Terminal #18 is connected as the common.

**Linear Output**
An option board may be installed that provides a 10 bit linear output signal relative to the Process Value. Terminal #12 is the positive side of the connection, and Terminal #10 is the negative side. The default range of the output is 4-20 mA, but can be changed via the Configuration Mode to 0-20 mA, 0-10 VDC, 2-10 VDC, 0-5 VDC, or 1-5 VDC.

**Control/Digital Inputs**
A digital input board, which utilizes Terminals #16 & #17, can be installed as an option. The input can be programmed in Configuration Mode to perform the following function:

- **Security**: When activated, the Program and Calibration Modes will not be accessible from the front panel.

Please note that this option is mutually exclusive with the RS-485 serial communication option.

---

**Configuration Mode**

<table>
<thead>
<tr>
<th><strong>Option Selection</strong></th>
<th><strong>Function</strong></th>
<th><strong>Adjustment Range</strong></th>
<th><strong>Default Value</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Comm</strong></td>
<td>Communication: The slot will be used for RS-485 communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sec</strong></td>
<td>Security: When the digital input is active, the Program and Configuration Modes cannot be accessed</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>No</strong></td>
<td>No Input</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Configuration MODE Continued**

<table>
<thead>
<tr>
<th><strong>Retransmission Output</strong></th>
<th><strong>Function</strong></th>
<th><strong>Adjustment Range</strong></th>
<th><strong>Default Value</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Selects the range of the retransmission output</td>
<td>0-20 mA, 4-20 mA</td>
<td>None</td>
</tr>
</tbody>
</table>

---

**Wiring**
INSTALLATION

PANEL MOUNTING

Mounting Grooves

Bracket Arm

APPENDIX A

SPECIFICATIONS

Sensor Input
Types: B, J, K, N, S, and T Thermocouples, 3 wire and 4 wire RTDs
Accuracy: ±0.1% of span
Sample Rate: 250 ms
Resolution: 14 bits
Sensor Break: Detected within 2 seconds

Control Inputs
Type: Sinking, Edge Sensitive
Logic: Low - 2.0 VDC, High ≥ 3.0 VDC
Impedance: 4.7 KΩ to +Voltage - Sourcing
Response Time: 35 ms
Function: Programmable

Outputs
Solid State: NPN open collector, 30 VDC max, 100 mA max.
Relay: SPDT, 5A resistive @ 110VAC
Latency: 75 μs seconds, plus 8 ms for relay pull-in

Linear Outputs
Ranges: 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V
Accuracy: ±0.25% (mA at 250Ω, V at 2kΩ);
degrades linearly to ±0.5%
Resolution: 8 bits in 250 ms (10 bits in 1s typ.)
Update: Approximately 4/s
Load Impedence: mA Ranges: 500Ω max.; V Ranges: 500Ω min.

Approvals
General: CE
EMC Susceptibility: Complies with EN50082-1: 1992,
EN50082-2: 1995
EMC Emissions: Complies with EN50081-1: 1992,
EN50081-2: 1994
Safety: Complies with EN61010-1: 1993

Communication
Type: Serial asynchronous, UART to UART
Data Format: Open ASCII: One start bit, even parity, seven data
bits, one stop bit
Physical Layer: RS-485
Maximum Zones: 99
Baud Rate: Selectable from 9600, 4800, 2400, or 1200

Electrical
Supply Voltage: 96-264 VAC, 50/60 Hz, or 20-50 VAC/VDC
Power Consumption: 4 Watts
Access. Power Supply: 24 VDC @ 30 mA

Display
Type: Red/Green, 7 segment LED, 5 digits primary
display, single digit secondary display
Height: 0.71" (18mm) primary display,
0.3" (7mm) secondary display
Annunciators: Output 1 & 2 status

Physical
Dimensions: 48mm x 96mm, 110mm deep
Mounting: Panel mount (mounting bracket supplied),
45mm x 92mm cutout
Terminals: Screw type - combination head
Front Panel Rating: NEMA 4X/IEC IP65
Case Material: GE Lexan 940
Weight: 0.96 lbs.

Environmental
Operating Temp.: 0° to 55° Celsius, 32° to 131° Fahrenheit
Storage Temp.: -20° to 60° Celsius, -4° to 176° Fahrenheit
Relative Humidity: 20% to 95% non-condensing

The instrument can be mounted in a panel with a thickness of up to 6mm. The cutout(s) should be made based on the recommended panel opening illustrated in the drawing above.

Insert the unit in the panel through the cutout. Ensure that the panel gasket is not distorted and the instrument is positioned squarely against the panel. Slide the mounting clamp into place on the instrument, as shown to the left, and push it forward until it is firmly in contact with the rear face of the mounting panel and the tabs on the bracket arm are seated in the mounting grooves on the side of the unit.

The electronic components of the instrument can be removed from the housing after installation without disconnecting the wiring. To remove the components, grip the side edges of the panel and pull the instrument forward. Take note of orientation of the unit for subsequent replacement in the housing.
Introduction

Your Anderson GK Series Temperature indicator is one model in a family of 1/8 DIN units which offers breakthrough display technology as well as easy-to-program single-line parameters. Designed to provide instant visual feedback regarding an application’s key input value, the GK Series unit not only has a 0.71” high LED display (27% larger than other 1/8 DIN units), but also the ability to change display color based on process status (programmable parameter in Operation Mode). Easy programming is made possible via a help function and a secondary legend display.

This manual will guide you through the installation and wiring of your GK Series unit with information on proper panel mounting and rear terminal layout and wiring instructions. In addition, the instrument’s operation, programming, and configuration modes are thoroughly explained. The Operation Mode provides day-to-day operation and allows editing of preset values. The Program Mode enables the configuration of various parameters prior to initial operation. These parameters include those for basic configuration as well as other settable features which will enhance the functionality and usability of the device.

The Configuration Mode allows selection of how outputs and special functions are utilized. This manual also provides information on the GK Series Temperature Indicator’s alarms; transistor, relay, and linear outputs; products specifications; and ordering and warranty procedures.

Features

- AWESOME 0.71” high digit LED display
- Programmable color change display based on an event
- Programmable help function and secondary legend display
- High and low alarm outputs
- Accepts most standard thermocouple types and 3 and 4 wire RTDs
- Standard outputs: two NPN transistors & one relay (optional 2nd relay)
- 250 ms sample time with 0.1% accuracy
- Optional RS-485 plug in card
- CE approved

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- Ordering Information
- Warranty

GK Series Temperature Indicator

Standard products manufactured by the Company are warranted to be free from defects in workmanship and material for a period of one year from the date of shipment, and products which are defective in workmanship or material will be repaired or replaced, at the option of the Company, at no charge to the Buyer. Final determination as to whether a product is actually defective rests with the Company. The obligation of the Company hereunder shall be limited solely to repair and replacement of products that fall within the foregoing limitations, and shall be conditioned upon receipt by the Company of written notice of any alleged defects or deficiency promptly after discovery within the warranty period, and in the case of components or units purchased by the Company, the obligation of the Company shall not exceed the settlement that the Company is able to obtain from the supplier thereof. No products shall be returned to the Company without prior consent. Products which the Company consents to have returned shall be shipped F.O.B. the Company’s factory. The Company cannot assume responsibility or accept invoices for unauthorized repairs to its components, even though defective. The life of the products of the Company depends. To a large extent, upon the type of usage thereof, and the COMPANY MAKES NO WARRANTY AS TO FITNESS OF ITS PRODUCTS FOR SPECIFIC APPLICATIONS BY THE BUYER NOR AS TO PERIOD OF SERVICE UNLESS THE COMPANY SPECIFICALLY AGREES OTHERWISE IN WRITING AFTER THE PROPOSED USAGE HAS BEEN MADE KNOWN TO IT.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

Technical Manual

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