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The Sensor Connection DPG-XR Series Digital Pyrometer Gauge Instruction Manual

Contents

The Sensor Connection DPG-XR Series Digital Pyrometer Gauge

Product Usage Instructions

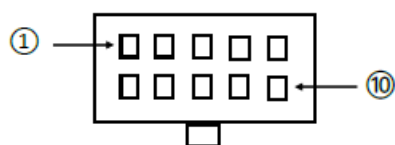- Use a thermocouple connector for thermocouple inputs.
- Splice wires for voltage & analog connections.
- To set the alarm points, follow the steps provided in the manual with the access code 0001.
- To access programming functions, use access code 0089.
- Adjust LED colors, temperature units, dim levels, and temperature offset as needed.

**Instruction Manual – DPG-XR Series Dual Channel Pyrometer**

Wiring Harness

Pin Number	Color	Function
1	**Red**	Gauge Power Input ** Note: +9 to +28 VDC
2	**Black**	Gauge Power Ground (Connect to Vehicle Chassis)
3	**Orange**	Nighttime Mode Display Dim Input * Note: HI/LO Function activated with input voltage > 5 V
4	**Brown**	Alarm *** Note: Connect to external warning buzzer or lamp
5	**Yellow**	Channel #1 Thermocouple Probe (+) Note: Type K, J, T, or E thermocouple (+)
6	**Blue**	Channel #1 Thermocouple Probe (-) Note: Type K, J, T, or E thermocouple (-)
7	**White**	Channel #2 Thermocouple Probe (+) Note: Type K, J, T, or E thermocouple (+)
8	**Green**	Channel #2 Thermocouple Probe (-) Note: Type K, J, T, or E thermocouple (-)
9	**Purple**	Channel #1 Analog Input (+) Note: 0 to 5 Volts DC (+) (ONLY IF FEATURE IS ENABLED)
10	**Gray**	Channel #2 Analog Input (+) Note: 0 to 5 Volts DC (+) (ONLY IF FEATURE IS ENABLED)

- Typically connected to parking light (front sidelights) switch
- **CAUTION:** As a safety precaution, the +V terminal of this product should be fused. We recommend using a 1 Amp, 3AG fast-acting type cartridge fuse (Littlefuse® # 312 001 or equivalent).
- Switches to Ground upon activation

Connector on Gauge (Front View)
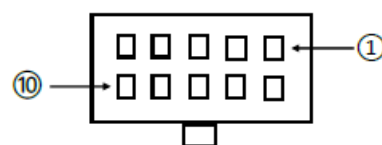
Mating Connector on Wiring Harness (Front View):
Molex 0430251008 (Crimp Terminals: Molex 0430300051)

Wiring Schematic
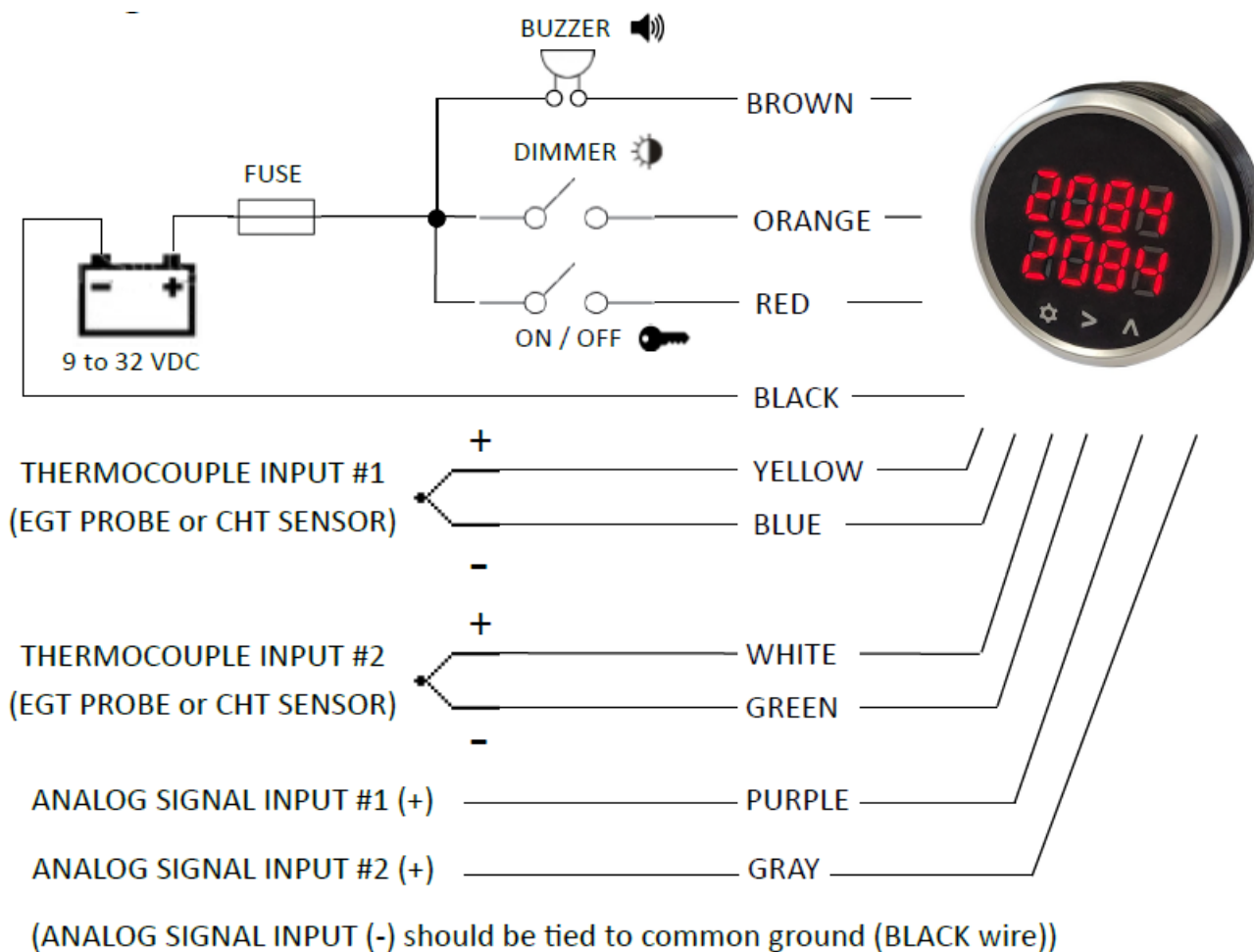
Wiring the gauge

- Use a thermocouple connector for thermocouple inputs. Splice wires for voltage & analog connections.

USA Thermocouple Color Codes

TC Type:	K	J	T	E
(+) Positive Wire	YELLOW	WHITE	BLUE	PURPLE
(-) Negative Wire	RED	RED	RED	RED
Connector Color	YELLOW	BLACK	BLUE	PURPLE

Note: All EGT and CHT sensors from HGSI The Sensor Connection follow USA color codes.

Configuring High Temperature Alarm Set Points

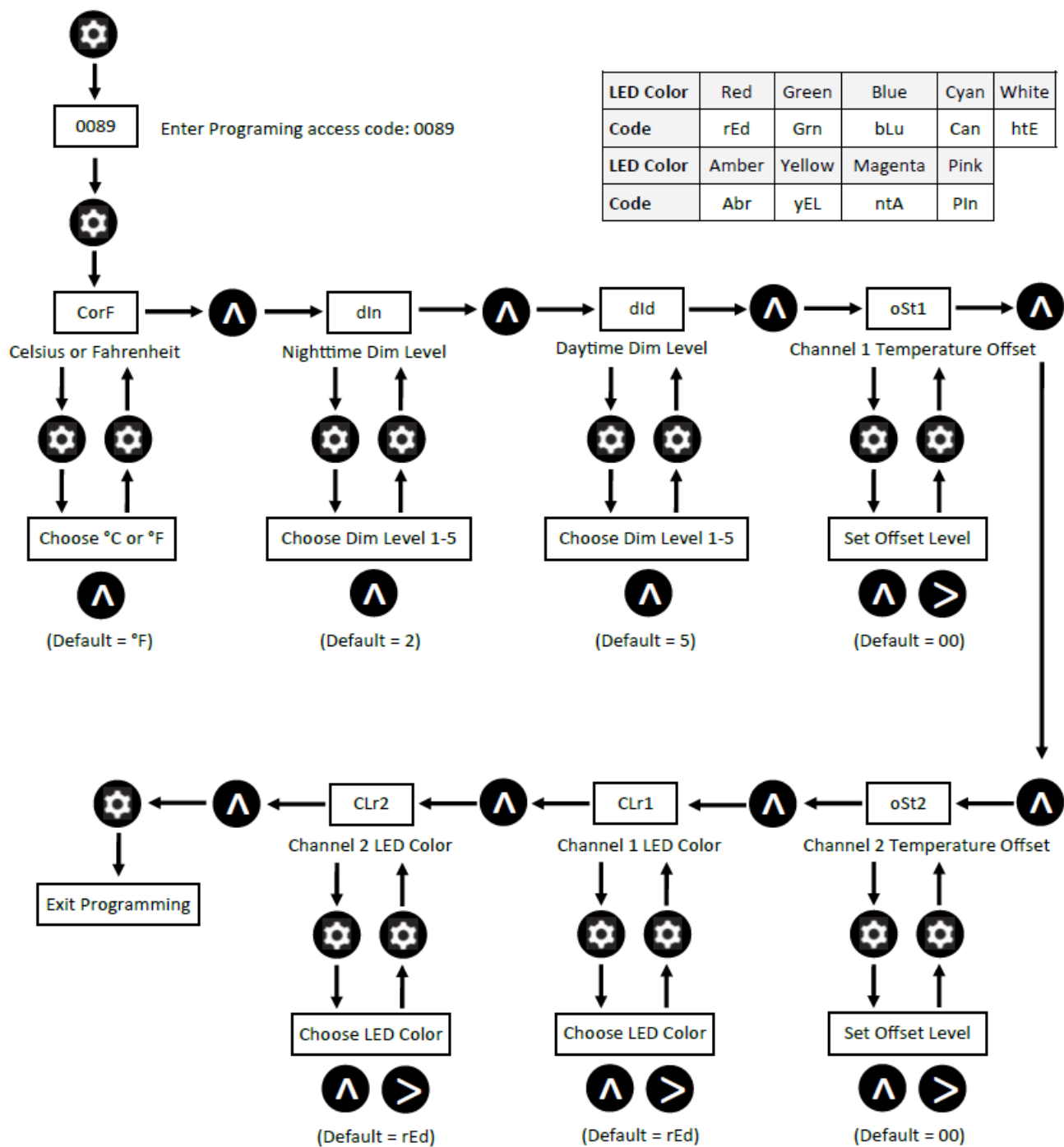| AH1	AL1	AH2	AL2
Alarm 1 Enable Set-Point	Alarm 1 Disable Set-Point	Alarm 2 Enable Set-Point	Alarm 2 Disable Set-Point
Choose ON Set-Point	Choose OFF Set-Point	Choose ON Set-Point	Choose OFF Set-Point
(Default = 1000)	(Default = 900)	(Default = 1000)	(Default = 900)

Enter Alarm Set-Point access code: 0001

Exit Programming
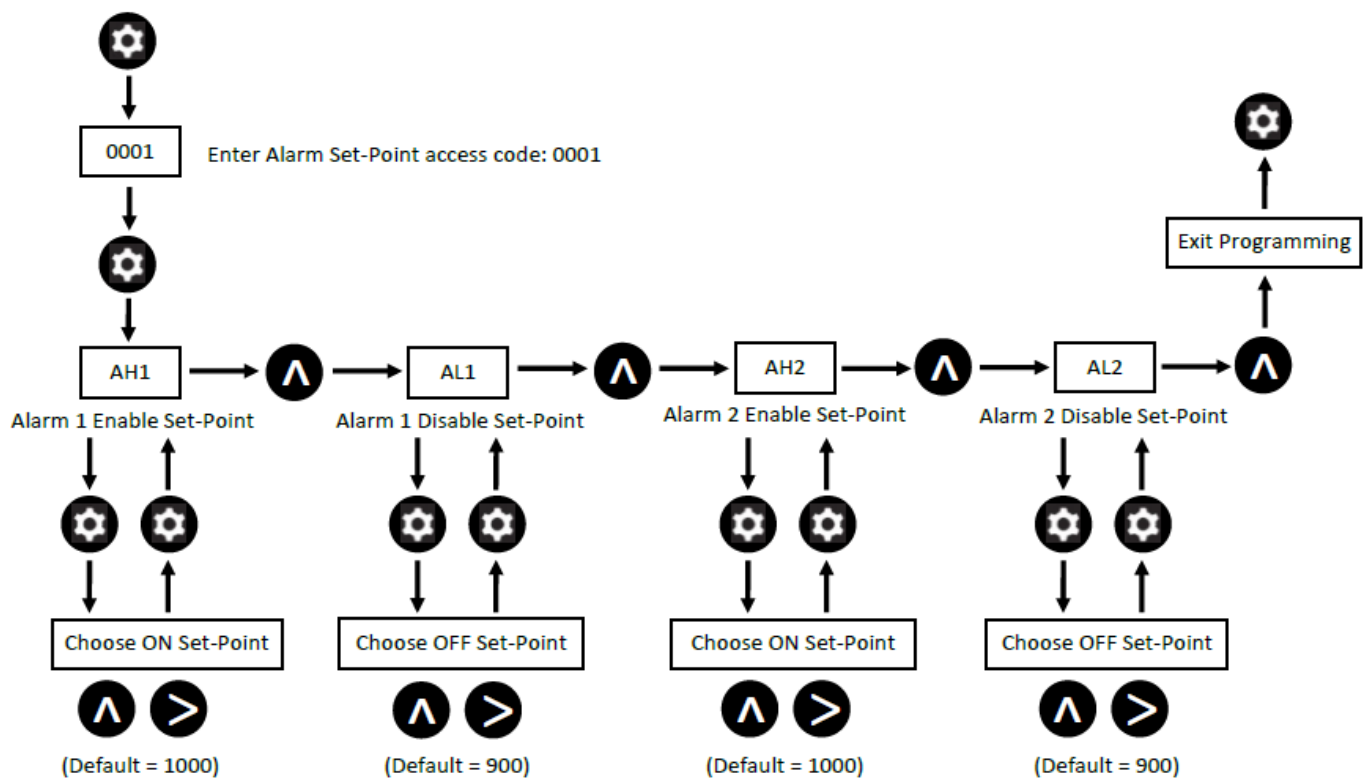
EXAMPLE: Setting the Channel 1 alarm parameters

1. Press GEAR key once (x1)
2. Input code 0001 using the Λ and > keys
3. Press GEAR key once (x1), "AH1" will be in the display
4. Press GEAR key once (x1)
5. Enter the numerical temperature value that you want the alarm to turn ON
6. Press GEAR key once (x1)
7. Press Λ once (x1), "AL1" will be in the display
8. Press GEAR key once (x1)
9. Enter the numerical temperature value that you want the alarm to turn OFF
10. Press GEAR key once (x1)
11. Press Λ three times (x3), END will be in the display window
12. Press GEAR key once (x1) to exit

Programming Functions

LED Color	Red	Green	Blue	Cyan	White
Code	rEd	Grn	bLu	Can	htE
LED Color	Amber	Yellow	Magenta	Pink	
Code	Abr	yEL	ntA	PIn	

Enter Programing access code: 0089

CorF
Celsius or Fahrenheit
Choose °C or °F
(Default = °F)

dIn
Nighttime Dim Level
Choose Dim Level 1-5
(Default = 2)

dId
Daytime Dim Level
Choose Dim Level 1-5
(Default = 5)

oSt1
Channel 1 Temperature Offset
Set Offset Level
(Default = 00)

oSt2
Channel 2 Temperature Offset
Set Offset Level
(Default = 00)

CLr1
Channel 1 LED Color
Choose LED Color
(Default = rEd)

CLr2
Channel 2 LED Color
Choose LED Color
(Default = rEd)

Exit Programming

Configuring Channel Input Type

```
        ⚙
        ↓
    ┌──────┐
    │ 0099 │    Enter Channel Input Type access code: 0099
    └──────┘
        ↓
        ⚙
        ↓
    ┌──────┐              ┌──────┐
    │ IN1  │ → ∧ → ∧ →    │ IN2  │ → ∧
    └──────┘              └──────┘
Channel 1 Input Type    Channel 2 Input Type
        ↓↑                    ↓↑
       ⚙ ⚙                  ⚙ ⚙
        ↓↑                    ↓↑
┌─────────────────┐    ┌─────────────────┐
│ Choose Input Type│    │ Choose Input Type│
└─────────────────┘    └─────────────────┘
       ∧ >                   ∧ >
   (Default = H)         (Default = H)
```

EXAMPLE: Setting the Channel 1 Input Type

1. Press GEAR key once (x1)
2. Input code 0055 using the ∧ and > keys
3. Press GEAR key once (x1), "IN1" will be in the display
4. Press GEAR key once (x1)
5. Enter the Input Type Code that you want using >
6. Press GEAR key once (x1)
7. Press ∧ once (x1), "IN2" will be in the display
8. Press GEAR key once (x1)
9. Enter the Input Type Code that you want using >
10. Press GEAR key once (x1)
11. Press ∧ three times (x3), END will be in the display window
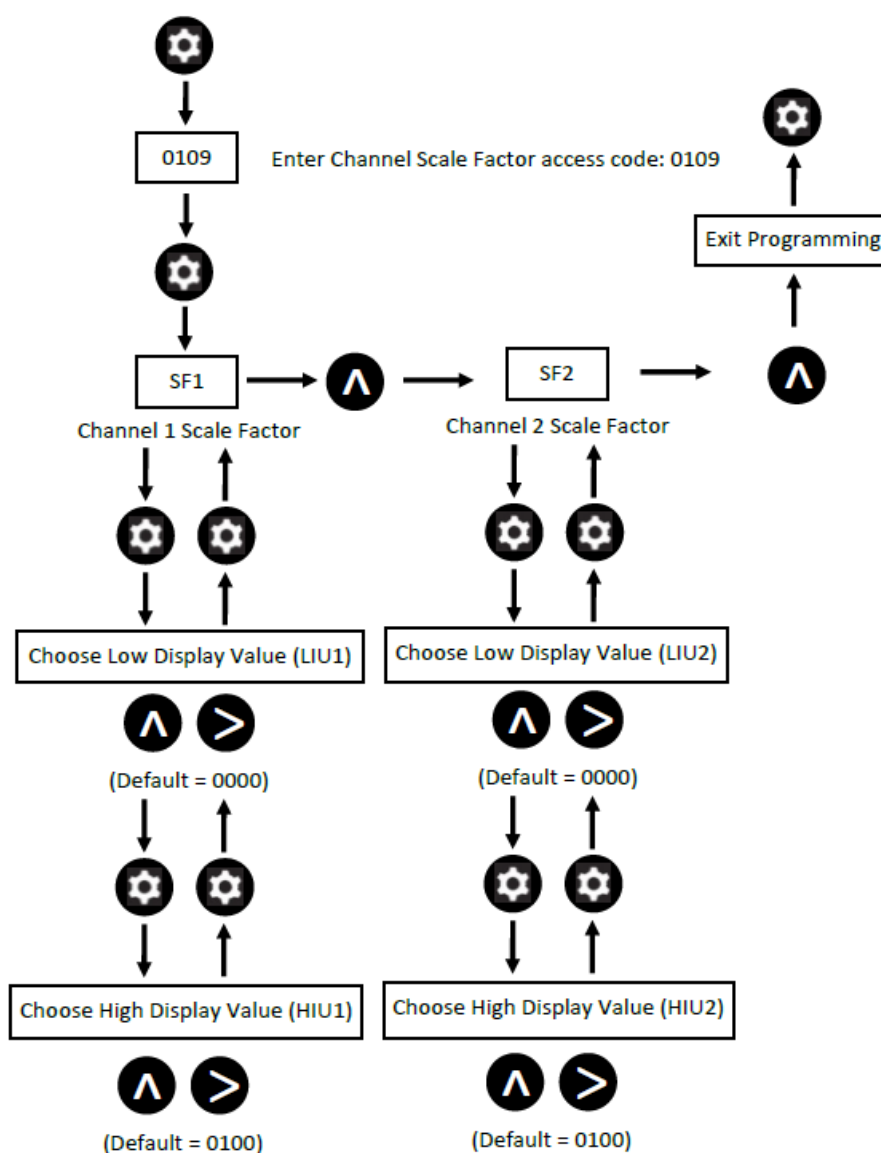12. Press GEAR key once (x1) to exit

Code	Input Type
OFF	Channel turned off
H	Type K Thermocouple *(default)*
J	Type J Thermocouple
t	Type T Thermocouple
E	Type E Thermocouple
0-5u	0-5 VDC
1-5u	1-5 VDC
4_5u	0.5-4.5 VDC

Configuring Channel Scale Factor (0-5 & 1-5 VDC Inputs Only)

EXAMPLE: Setting the Scale Factor values

1. Press GEAR key once (x1)
2. Input code 0066 using the Λ and > keys

3. Press GEAR key once (x1), "SF1" will be in the display

4. Press GEAR key once (x1), "LIU1" will be in the display

5. Enter the low display that you want using the Λ and > keys

6. Press GEAR key once (x1)

7. Press Λ once (x1), "HIU1" will be in the display

8. Press GEAR key once (x1)

9. Enter the high display that you want using the Λ and > keys

10. Press GEAR key once (x1)

11. Press Λ once (1x), "SF2" will be in the display

12. Repeat steps 4-10 to set SF2

13. Press GEAR key once (x1) to exit programming

Scale factor only applies to analog inputs (0-5 VDC & 1-5 VDC). Low value will either be 0 VDC or 1 VDC (depending on input type) while high value will always be 5 VDC.
Ex: 0-5 VDC input with a low display of 0 and a high display of 100 will read as follows:
0VDC= 0, 1VDC= 20, 2VDC= 40, 3VDC= 60, 4VDC= 80, & 5VDC= 100

General Keypad Functions

Putting the gauge into Peak Temperature Capture mode

1. Press > key once (the MAX backlight LED will turn on)

Resetting the Peak Temperature Capture value

1. Press and hold Λ key for 3 seconds

Returning the gauge to Real-Time mode

1. Press > key once (the MAX backlight LED will turn off)

Adjusting the display Brightness

1. Press Λ key to adjust between the five HI to LO display brightness settings

Technical Specifications

Input Specifications	
Number of Input Channels	2
Thermocouple Types	Type K, J, T, & E (ungrounded)
Measuring Range (K)	-238 to +2282°F (-150 to +1250°C)
Measuring Range (J)	-148 to +2174°F (-100 to +1190°C)
Measuring Range (T)	-148 to +734°F (-100 to +390°C)
Measuring Range (E)	-148 to +1742°F (-100 to +950°C)
Measuring Range (Voltage)	0 to 5 VDC
Input Resistance	60k Ω

LED Display Specifications	
Number of Digits	4 (x 2 lines)
Height	0.275 inch (7mm)
Resolution	1°
Display Update Rate	500 mS

Power Specifications	
Supply Voltage	9 to 28 VDC
Current Draw	50 mA (nominal)

Performance Specifications	
Accuracy	+/- 0.5% of full scale
µP Sample Rate	10 mS
Peak Temperature Capture	320 mS
Relay Specifications	
Contact Rating	2 Amp

Environmental Specifications	
Operating Temperature Range	-40 to +185°F (-40 to +85°C)
Compensated (CJC) Range	+32 to +122°F (0 to +50°C)
Humidity	90% max RH (non-condensing)
Liquid and Dust Protection (Face)	IP61
Liquid and Dust Protection (Rear)	IP50

Mechanical Specifications	
Case Dimension OD	2.00 (51 mm)
Case Dimension Length	1.5 inches (38 mm)
Panel Cutout Dimensions	2.05 (52 mm) round hole
Weight	1.8 ounces (50 grams)

DANGER

- Ensure that the vehicle will remain stationary and turn off the engine before installing this product. Failure to do so could result in a fire, and could make the vehicle move during installation.
- Remove the key from the ignition and disconnect the negative (-) battery terminal prior to installation of this product. Failure to do so could result in a fire caused by an electrical short circuit.
- Take care not to install this product in a way that interferes with safety equipment such as seat belts and air bag systems or vehicle operation equipment such as engine controls, steering wheel or brake systems. Interference with normal operation of the vehicle can result in an accident or fire.
- Solder or use a solderless connector for wiring connections, and make sure connections are insulated. In areas where there could be tension or sudden impacts on the wiring, safeguard the wiring with corrugated tubing or other shock absorbent material. Accidental shorts can cause fires.

WARNING

- Carefully consider the installation location and driver's operation of the product before installation. Do not install the product where it interrupts driving and the safety devices of the vehicle such as the air bag system. Be sure not to install the unit where it could fall. Improper installation or operation could cause the product to fall and damage the vehicle or cause serious danger by impeding driving.
- Do not disassemble or modify this product. Such actions can not only damage or destroy the product but will also void the warranty.
- Do not install this product immediately after the engine has been switched off. The engine and exhaust system are extremely hot at this time and can cause burns if touched.

- Ensure that the wiring of this product does not harm the other wiring of the vehicle. Any controlling devices or other electronic components of the vehicle could be damaged.
- Please keep children and infants away from the installation area. Children may swallow small parts or be injured in other ways.

CAUTION

- Insulate any unused wires. If any wires or connectors loosen during installation, please make sure they are correctly reattached.
- Dropping any of the components of this product will result in damage to the product.
- Excessive force on switches/terminals may result in damage to the product.
- Use only the wires provided. If additional wires are required, use the same quality and gauge wire as is provided with the kit.
- Do not attach wires on the body of the vehicle or engine parts as this may result in damage to the product.
- Install wires away from ignition and also radio signal frequency interference, as this could cause the gauges to malfunction.
- Do not place wires near the engine, exhaust pipe or turbine. It may result in damage or fusion of wires.
- Make sure the waterproof processing is done when routing wires in the engine compartment.
- When installing the sensor, do not bend the wire near the sensor body.
- Wear gloves to avoid burns when soldering and cuts when working with wiring.
- Do not share a single fuse with multiple gauges. Every gauge requires an independent fuse.
- Install gauge away from hot or wet places.
- Do not pull the wires out of connectors forcefully. The connectors may be broken and the wires may be cut. When pulling out the wires, press the lock firmly and unclip the locks of connectors.

LIMITED WARRANTY

Harold G. Schaevitz Industries – The Sensor Connection LLC (TSC) warrants to the consumer that all TSC products will be free from shortcomings in material and workmanship for a period of (3) months from date of the original purchase. Products that fail within this 3-month warranty period will be repaired or replaced at TSC's option to the consumer, when it is determined by TSC that the product failed due to defects in material or workmanship. This warranty is limited to the repair or replacement of parts in the TSC instruments. In no event shall this warranty exceed the original purchase price of the TSC instruments nor shall TSC be responsible for special, incidental or consequential damages or costs incurred due to the failure of this product. Warranty claims to TSC must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of the product and is non-transferable. All implied warranties shall be limited in duration to the said 12 month warranty period. Breaking the instrument seal, improper use or installation, accident, water damage, abuse, unauthorized repairs or alterations voids this warranty. TSC disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured or supplied by TSC.

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FAQ

- **Q: What type of thermocouples are compatible with this gauge?**
  - **A:** Type K, J, T, or E thermocouples are compatible with this gauge.
- **Q: How should I wire the alarm function?**
  - **A:** Connect the alarm to an external warning buzzer or lamp. The alarm switches to ground upon activation.
- **Q: What is the default setting for the nighttime dim level?**
  - **A:** The default setting is level 2. You can adjust it between levels 1-5.

Documents / Resources

Instruction Manual DPG-XR Series Digital Gauge with Color LED Display Dual Channel - Thermocouple /or/ 0-5VDC Input THE SENSOR CONNECTION	**The Sensor Connection DPG-XR Series Digital Pyrometer Gauge** [pdf] Instruction Manual DPG-XR Series Digital Pyrometer Gauge, DPG-XR Series, Digital Pyrometer Gauge, Pyrometer Gauge, Gauge

References

- **User Manual**