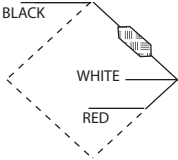
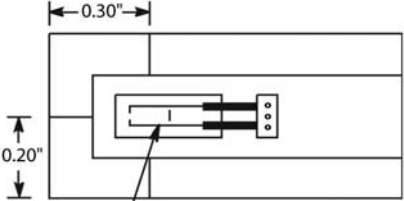
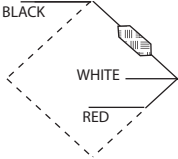
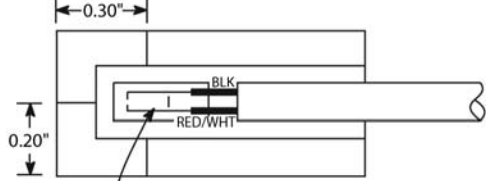
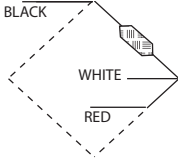
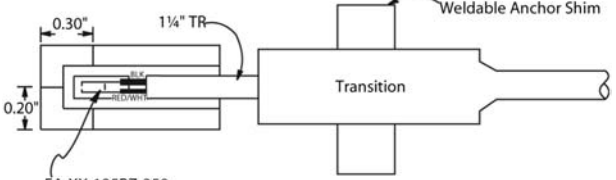
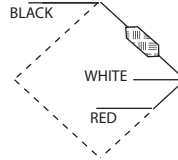
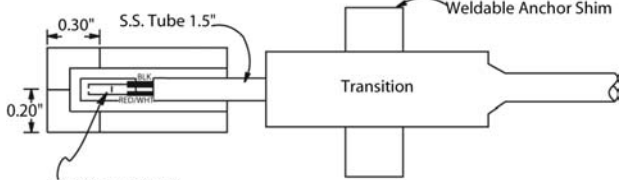
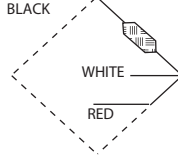
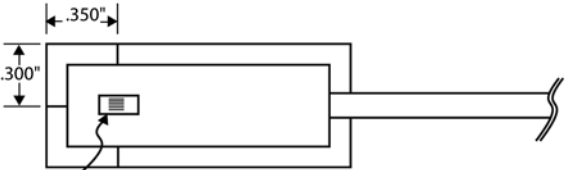


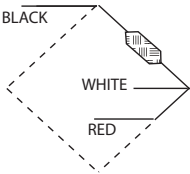
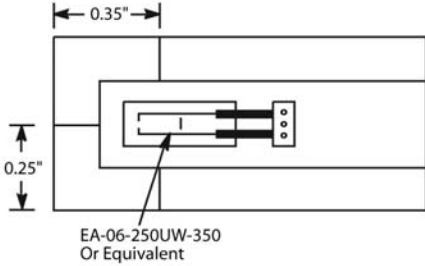
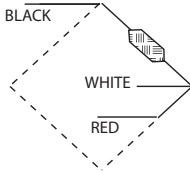
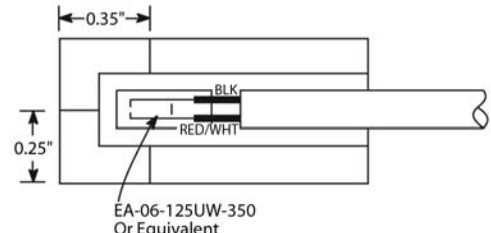
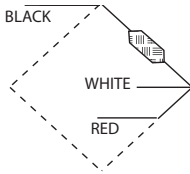
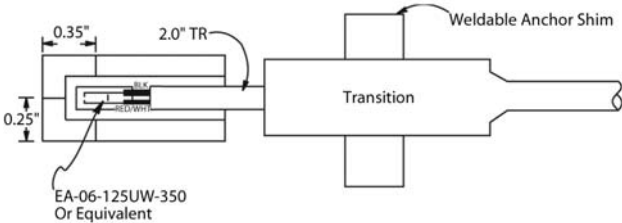
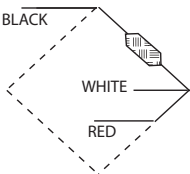
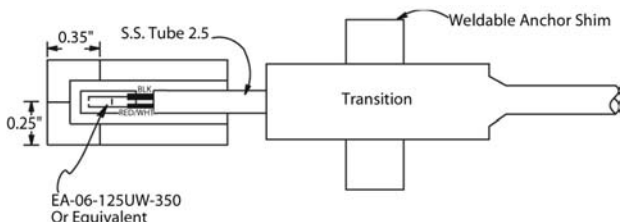
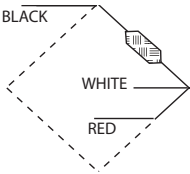
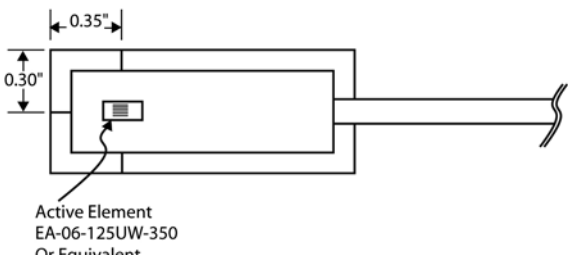
TABLE OF CONTENTS

AXIAL	Page 1
Axial gages measure strain in one principal direction. Even though half and full bridge configurations are available, all the gages in this section measure strain along the long axis of the shim	
AXIAL/CHEVRON	Page 5
Axial/Chevron gages have 2 separate sensor shims allowing the engineer or designer to locate the gages in any orientation he chooses for highest output or cancellation effects.	
CHEVRON	Page 6
Chevron gages have strain gages mounted 90° apart on the same shim. Adding Poisson's ratio measurement is the most popular use of these gages.	
SHEAR	Page 7
More compact than chevron gages, these gages have strain gages mounted 90° apart and also 45° from the long axis of the shim. Shaft torque and shear are easy measurements with these gages.	
AMPLIFIED	Page 9
These gages combine a four active element Wheatstone bridge, internal bridge excitation regulation, and a gain of 100 or 1000 to produce a high level signal output for data acquisition and superior signal to noise ratio. Axial, chevron, and shear versions are shown.	
SEVERE ENVIRONMENT	Page 10
Thick rubber covers the cable for excellent mechanical protection in these designs. Axial, chevron, and shear versions are shown.	
TEMPERATURE SENSORS	Page 11
Foil, RTD, and integrated circuit temperature sensors are available in the same pre-wired and waterproofed packaging. Thermo-wells and custom versions are also available.	
POLYIMIDE (BONDABLE)	Page 12
Polyimide shims allow for bonding where welding is not suggested or permitted. Any quality strain gage adhesive may be used to bond these gages.	

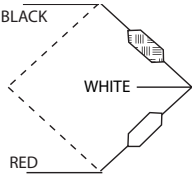
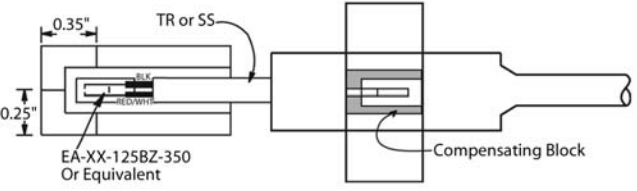
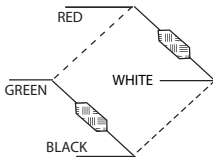
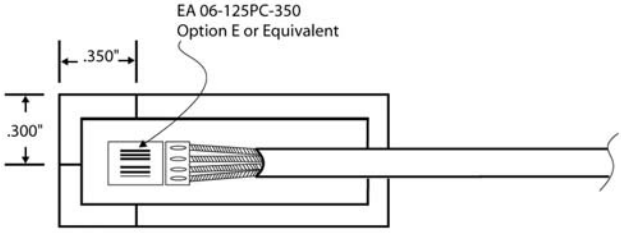
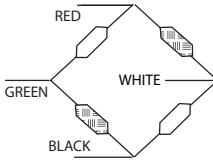
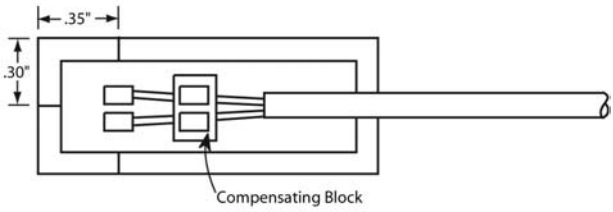
CUSTOM VERSIONS OF ALL THE GAGES SHOWN IN THIS CATALOG ARE AVAILABLE.

<p>HBW-12-125-6-NL HBW-35-125-6-NL HBW-100-125-6-NL</p> <p>Custom Patterns Available. NL - Designates NO LEADS.</p>		 <p>EA-06-125BZ-350 Or Equivalent</p>
<p>HBW-12-125-6-XVR HBW-35-125-6-3VR HBW-35-125-6-XVR HBW-100-125-6-XVR</p> <p>.375 dia. axial precurve on sensor shim available. X - Substitute with ribbon length in feet.</p>		 <p>EA-XX-125BZ-350 Or Equivalent</p>
<p>HBW-12-125-6-XGP-TR HBW-35-125-6-10GP-TR HBW-35-125-6-XGP-TR</p> <p>.375 dia. precurve on sensor available. TR - Designates teflon ribbon stress relief. X - Substitute with cable length in feet. HP, UP CABLES ALSO AVAILABLE.</p>		 <p>EA-XX-125BZ-350 Or Equivalent</p>
<p>HBW-12-125-6-XGP-SS HBW-35-125-6-XGP-SS HBW-100-125-6-XGP-SS</p> <p>SS - Designates stainless steel stress relief. X - Substitute with cable length in feet. HP, UP CABLE ALSO AVAILABLE.</p>		 <p>EA-XX-125BZ-350 Or Equivalent</p>
<p>HBW-12-125-6-XGP-NT HBW-35-125-6-10GP-NT HBW-35-125-6-XGP-NT HBW-100-125-6-XGP-NT</p> <p>X - Substitute with cable length in feet. UP CABLE ALSO AVAILABLE</p>		 <p>Active Element EA-06-125BZ-350 Or Equivalent</p>

- Custom gage patterns can be substituted
- Polyimide shim available
- 9 PPM/°F compensation available upon request
- Bold face type designates standard
- Other resistances available upon request

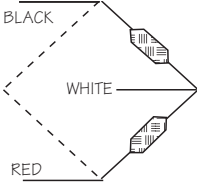
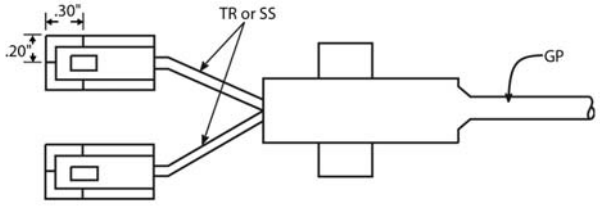
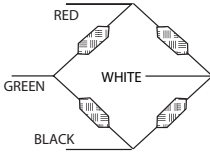
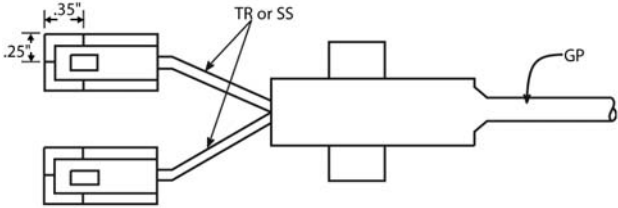
<p>HBW-12-250-6-NL HBW-35-250-6-NL HBW-100-250-6-NL</p> <p>Custom Patterns Available. NL - Designates NO LEADS.</p>		
<p>HBW-12-250-6-XVR HBW-35-250-6-XVR HBW-100-250-6-XVR</p> <p>.375 dia. precurve on sensor available. X - Substitute with ribbon length in feet.</p>		
<p>HBW-12-250-6-XGP-TR HBW-35-250-6-XGP-TR HBW-100-250-6-XGP-TR</p> <p>.375 dia. precurve on sensor available. TR - Designates teflon ribbon stress relief. X - Substitute with cable length in feet. HP, UP CABLES ALSO AVAILABLE</p>		
<p>HBW-12-250-6-XGP-SS HBW-35-250-6-XGP-SS HBW-100-250-6-XGP-SS</p> <p>SS - Designates stainless steel stress relief. X - Substitute with cable length in feet. HP, UP CABLE ALSO AVAILABLE</p>		
<p>HBW-12-250-6-XGP-NT HBW-35-250-6-10GP-NT HBW-35-250-6-XGP-NT HBW-100-250-6-XGP-NT</p> <p>X - Substitute with cable length in feet. UP CABLE ALSO AVAILABLE.</p>		

- Custom gage patterns can be substituted
- Polyimide shim available
- 9 PPM/°F compensation available upon request
- Other resistances available upon request

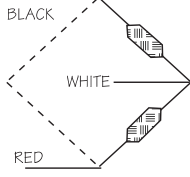
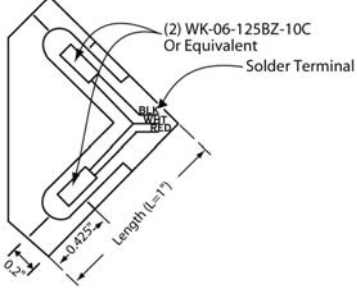
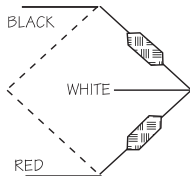
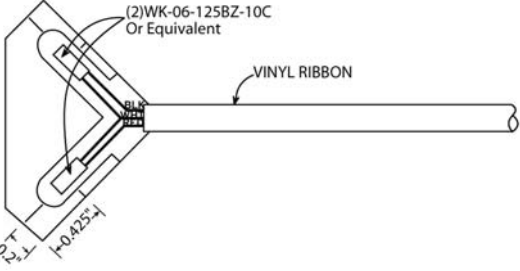
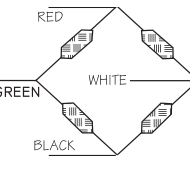
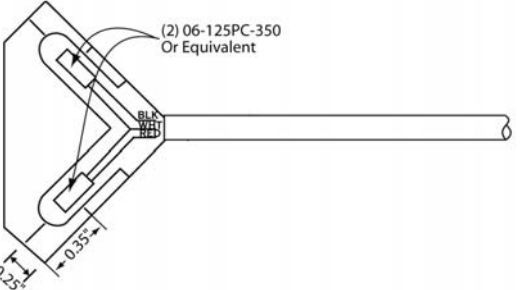
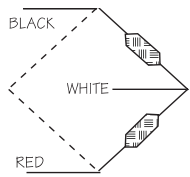
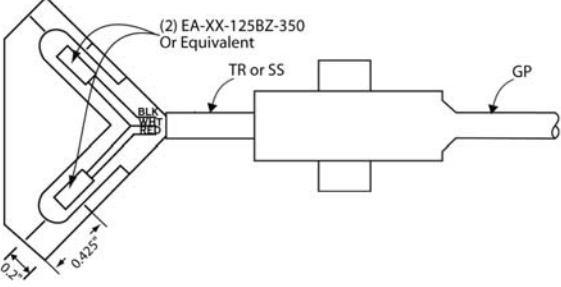
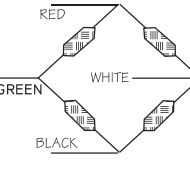
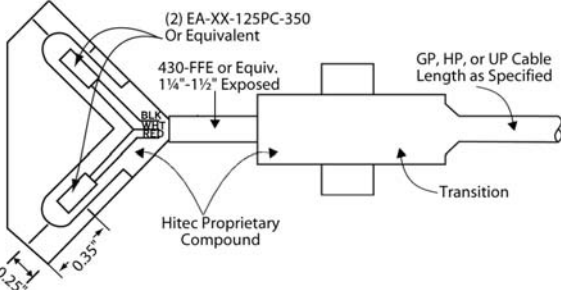
<p>HBW-12-250-6-XGP-HB-TR HBW-12-250-6-XGP-HB-SS HBW-35-250-6-XGP-HB-TR HBW-100-250-6-XGP-HB-TR HBW-100-250-6-XGP-HB-SS</p> <p>.375 dia. precurve on sensor available. HB - Designates half bridge configuration. X - Substitute with cable length in feet. HP, UP CABLE ALSO AVAILABLE.</p>		
<p>HBWH-12-250-6-XGP-NT HBWH-35-250-6-XGP-NT HBWH-100-250-6-XGP-NT</p> <p>Used in pairs wired together as a full bridge. Cable effects should be considered. X - Substitute cable length in feet. HP, UP ALSO AVAILABLE.</p>		
<p>HBWF-35-250-6-XGP-NT HBWF-100-250-6-XGP-NT</p> <p>X - Substitute cable length in feet. HP, UP CABLE AVAILABLE.</p>		

- Custom gage patterns can be substituted • Polyimide shim available
- 9 PPM/°F compensation available upon request
- Other resistances available upon request

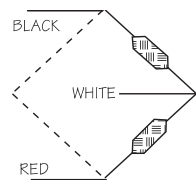
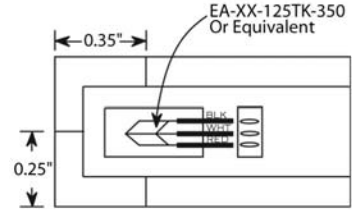
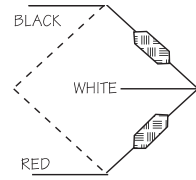
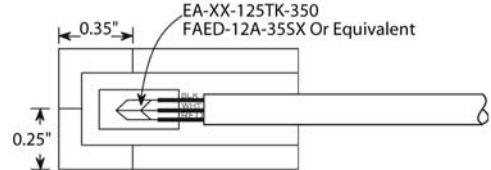
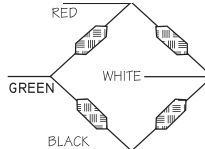
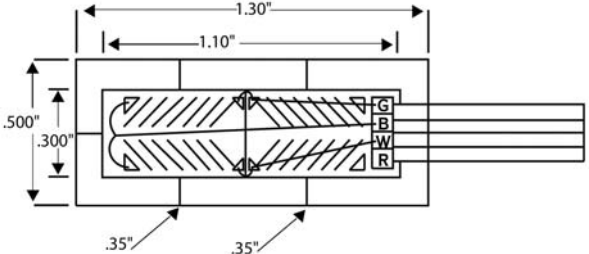
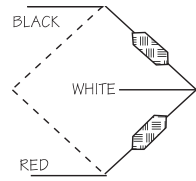
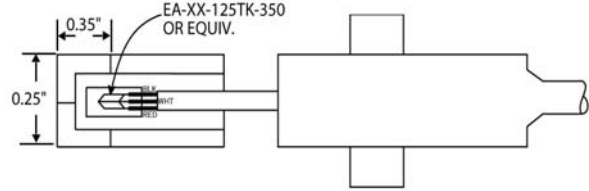
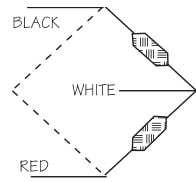
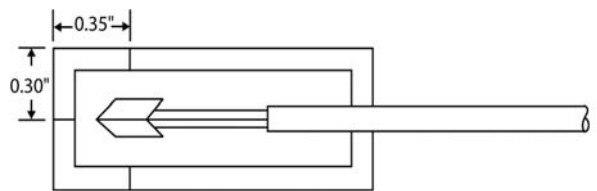
AXIAL/CHEVRON

<p>HBWD-12-125-6-XGP-TR HBWD-12-125-6-XGP-SS HBWD-35-125-6-XGP-TR HBWD-35-125-6-XGP-SS HBWD-100-125-6-XGP-TR HBWD-100-125-6-XGP-SS</p> <p>.375 dia. axial precurve on sensors available. X - Substitute cable length in feet. HP, UP CABLE AVAILABLE.</p>		
<p>HBWH-35-125-6-XGP-FR HBWH-35-125-6-XGP-FS HBWH-100-125-6-XGP-FR HBWH-100-125-6-XGP-FS</p> <p>1.00 dia. axial precurve on sensors available. X - Substitute cable length in feet. HP, UP CABLE AVAILABLE.</p>		

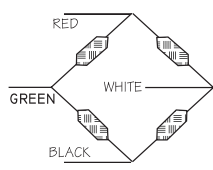
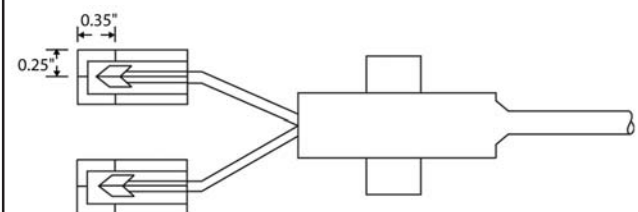
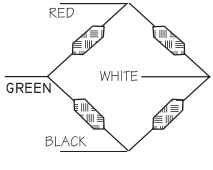
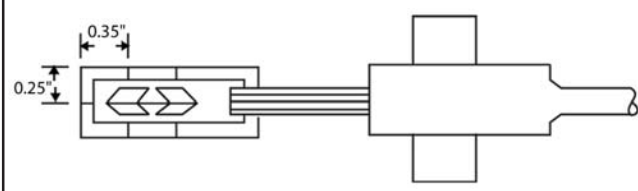
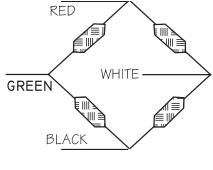
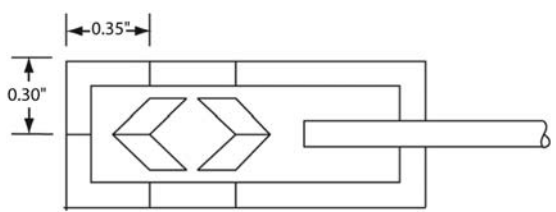
- Custom gage patterns can be substituted
- Polyimide shim available
- 9 PPM/°F compensation available upon request
- Other resistances available upon request

<p>HBWC-12-125-6-NL HBWC-35-125-6-NL HBWC-100-125-6-NL</p> <p>NL - Designates NO LEADS.</p>		
<p>HBWC-12-125-6-XVR HBWC-35-125-6-3VR HBWC-35-125-6-XVR HBWC-100-125-6-XVR</p> <p>X - Substitute ribbon length in feet.</p>		
<p>HBWC-35-125-6-XVR-FB HBWC-100-125-6-XVR-FB</p> <p>X - Substitute cable length in feet.</p>		
<p>HBWC-12-125-6-XGP-TR HBWC-12-125-6-XGP-SS HBWC-35-125-6-XGP-TR HBWC-35-125-6-XGP-SS HBWC-100-125-6-XGP-TR HBWC-100-125-6-XGP-SS</p> <p>X - Substitute cable length in feet. HP, UP CABLE AVAILABLE.</p>		
<p>HBWC-35-125-6-XGP-FR HBWC-35-125-6-XGP-FS HBWC-100-125-6-XGP-FR HBWC-100-125-6-XGP-FS</p> <p>X - Substitute cable length in feet. HP, UP CABLE AVAILABLE.</p>		

- Custom gage patterns can be substituted
- Polyimide shim available
- 9 PPM/°F compensation available upon request
- Other resistances available upon request

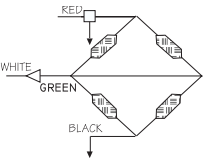
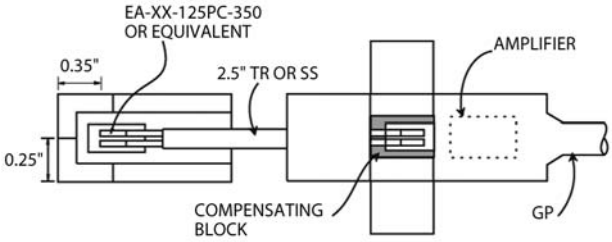
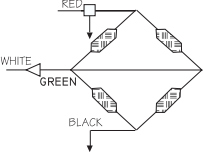
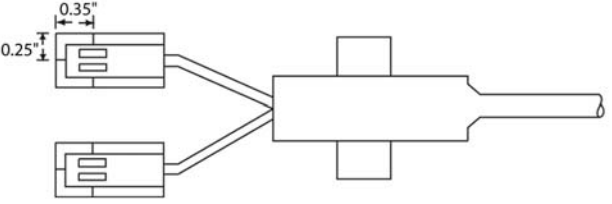
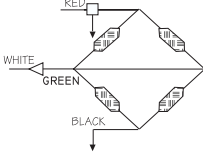
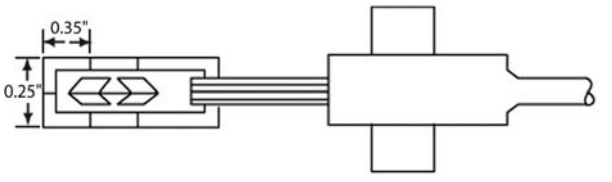
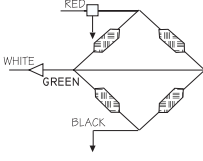
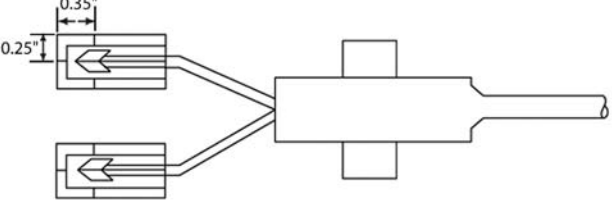
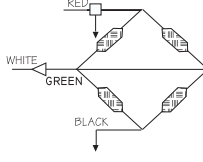
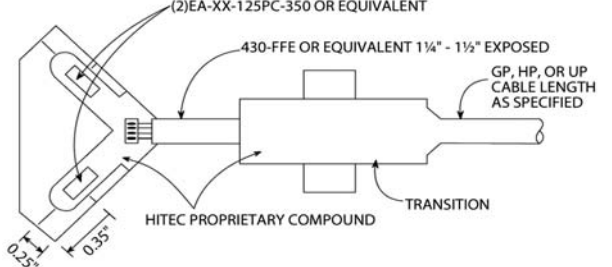
<p>HBWS-12-125-6-NL HBWS-35-125-6-NL HBWS-100-125-6-NL</p> <p>NL - Designates NO LEADS.</p>		
<p>HBWS-12-125-6-XVR HBWS-35-125-6-3VR HBWS-35-125-6-XVR HBWS-100-125-6-XVR</p> <p>1.00 Dia. precurve on sensors available. X - Substitute ribbon length in feet. TEFLON RIBBON ALSO AVAILABLE.</p>		
<p>HBWS-12-125-6-XVR-FB HBWS-35-125-6-XVR-FB HBWS-100-125-6-XVR-FB</p> <p>X - Substitute ribbon length in feet.</p>		
<p>HBWS-12-125-6-XGP-TR HBWS-12-125-6-XGP-SS HBWS-35-125-6-XGP-TR HBWS-35-125-6-XGP-SS HBWS-100-125-6-XGP-TR HBWS-100-125-6-XGP-SS</p> <p>1.00 dia. precurve on sensors available. X - Substitute cable length in feet. HP, UP CABLE AVAILABLE.</p>		
<p>HBWS-12-125-6-XGP-NT HBWS-35-125-6-XGP-NT HBWS-100-125-6-XGP-NT</p> <p>UP CABLE AVAILABLE</p>		

• Custom gage patterns can be substituted • Polyimide shim available
 • 9 PPM/°F compensation available upon request • Bold face type designates standard
 • Other resistances available upon request

<p>HBWS-12-125-6-XGP-DR HBWS-12-125-6-XGP-DS HBWS-35-125-6-XGP-DR HBWS-35-125-6-XGP-DS HBWS-100-125-6-XGP-DR HBWS-100-125-6-XGP-DR</p> <p>1.00 dia. precurve on sensors available. X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE.</p>		
<p>HBWS-12-125-6-XGP-FR HBWS-12-125-6-XGP-FS HBWS-35-125-6-XGP-FR HBWS-35-125-6-XGP-FS HBWS-100-125-6-XGP-FR HBWS-100-125-6-XGP-FS</p> <p>X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE.</p>		
<p>HBWS-12-125-6-XGP-FNT HBWS-35-125-6-XGP-FNT HBWS-100-125-6-XGP-FNT</p> <p>X - Substitute cable length in feet. UP CABLE AVAILABLE.</p>		

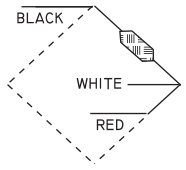
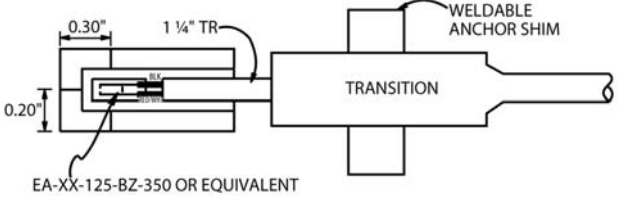
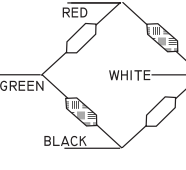
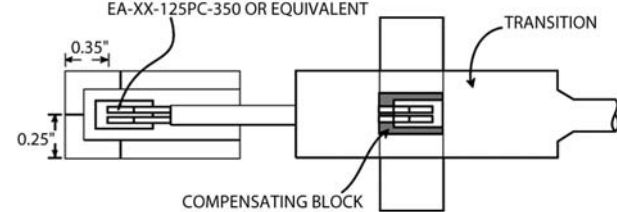
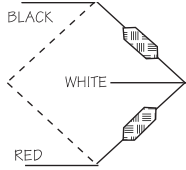
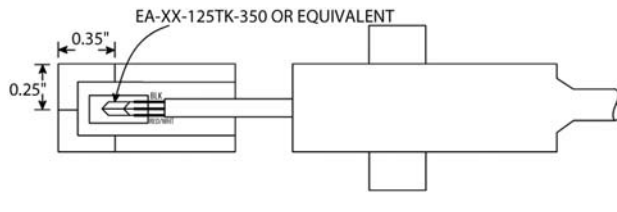
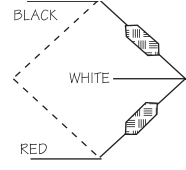
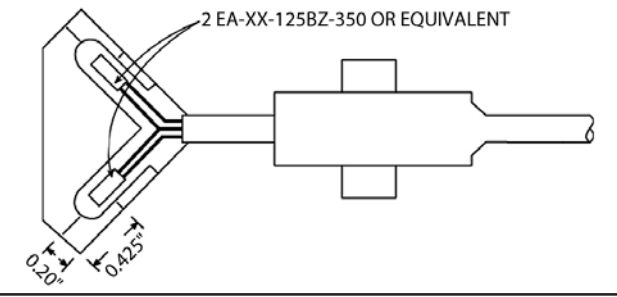
- Custom gage patterns can be substituted
- Polyimide shim available
- 9 PPM/°F compensation available upon request
- Other resistances available upon request

AMPLIFIED

<p>HBWF-35-125-6-XGP-AMP-TR HBWF-35-125-6-XGP-AMP-SS HBWF-100-125-6-XGP-AMP-TR HBWF-100-125-6-XGP-AMP-SS</p> <p>1.00 dia. precurve on sensors available. X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE</p>		
<p>HBWH-35-125-6-XGP-AMP-TR HBWH-35-125-6-XGP-AMP-SS HBWH-100-125-6-XGP-AMP-TR HBWH-100-125-6-XGP-AMP-SS</p> <p>1.00 dia. precurve on sensors available. X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE</p>		
<p>HBWS-35-125-6-XGP-AMP-TR HBWS-35-125-6-XGP-AMP-SS HBWS-100-125-6-XGP-AMP-TR HBWS-100-125-6-XGP-AMP-SS</p> <p>1.00 dia. precurve on sensors available. X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE</p>		
<p>HBWS-35-125-6-XGP-AMP-DR HBWS-35-125-6-XGP-AMP-DS HBWS-100-125-6-XGP-AMP-DR HBWS-100-125-6-XGP-AMP-DS</p> <p>1.00 dia. precurve on sensors available. X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE</p>		
<p>HBWC-35-125-6-XGP-AMP-TR HBWC-35-125-6-XGP-AMP-SS HBWC-100-125-6-XGP-AMP-TR HBWC-100-125-6-XGP-AMP-SS</p> <p>X - Substitute with cable length in feet. HP, UP CABLE AVAILABLE.</p>		

- All amplified gages come in full bridge configurations
- All amplified gages supplied with bridge voltage regulation
- Gain of 100x standard, other gains available

SEVERE ENVIRONMENT

<p>HBW-12-125-6-XVH HBW-35-125-6-XVH HBW-100-125-6-XVH</p> <p>.375 dia. precurve on sensor available. X - Substitute with lead length in feet.</p>		
<p>HBWF-35-125-6-XVH HBWF-100-125-6-XVH</p> <p>1.00 dia. axial precurve on sensor available. X - Substitute with lead length in feet.</p>		
<p>HBWS-12-125-6-XVH HBWS-35-125-6-XVH HBWS-100-125-6-XVH</p> <p>1.00 dia. precurve on sensor available. X - Substitute with lead length in feet. Full Bridge configurations available.</p>		
<p>HBWC-12-125-6-XVH HBWC-35-125-6-XVH HBWC-100-125-6-XVH</p> <p>X - Substitute with lead length in feet. Full Bridge configurations available</p>		

- Custom gage patterns can be substituted • Large transition section
- 9 PPM/°F compensation available upon request • Thick hose covers cable for added mechanical support
- Other resistances available upon request • Hose lengths limited to 20 feet. Consult factory for longer options

TEMPERATURE

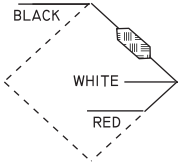
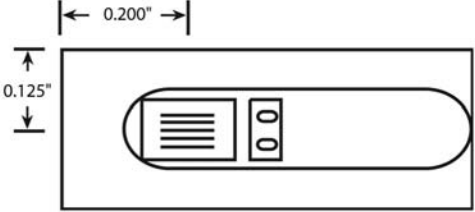
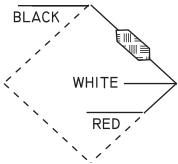
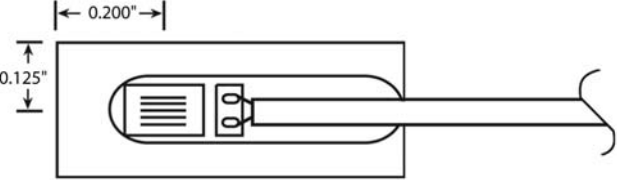
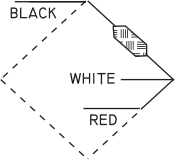
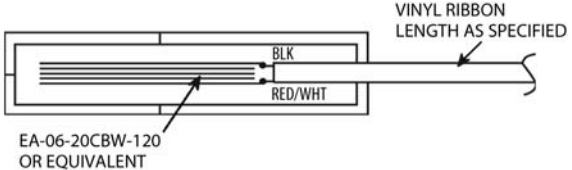
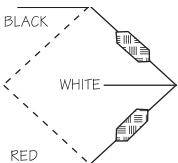
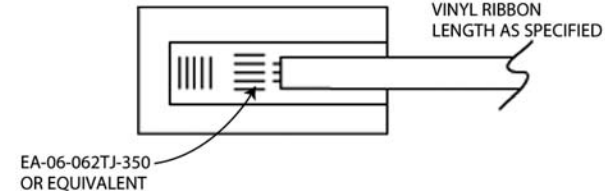
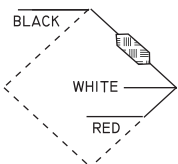
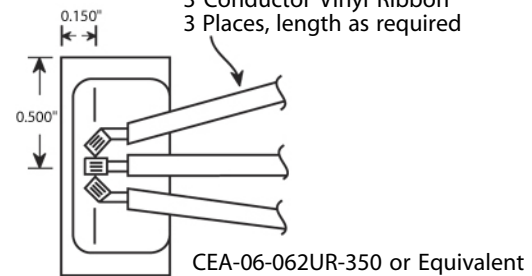
HBWTG-05-125-X-NL HBWTG-05-125-X-XVR HBWTG-05-125-X-XVR *		
HBWTG-5V-AD22100-XVR HBWTG-5V-AD22100-XTR HBWTG-5V-AD22100-XSS **	SIMPLIFIED BLOCK DIAGRAM 	
HBWTG-50C-M502-XVR HBWTG-50C-M502-XTR ***		

* WTG nickel foil temperature sensor manufactured by Measurements Group; Raleigh, NC

** AD22100 Temperature sensor manufactured by Analog Devices; Norwood, MA. Requires + 5.0 volt power supply

*** M502 Thermister temperature sensor manufactured by Sensor Scientific; Fairfield, NJ

AXIAL POLYIMIDE

<p>HBPN-12-125-6-NL HBPN-35-125-6-NL</p>		 <p style="text-align: center;">EA-06-125BZ-350- or Equiv.</p>
<p>HBPN-12-125-6-3VR HBPN-35-125-6-3VR</p>		
<p>HBP-12-2000-C-3VR HBP-35-2000-C-3VR</p>		 <p style="text-align: center;">EA-06-20CBW-120 OR EQUIVALENT</p>
<p>HBPT-12-063-6-3VR HBPT-12-063-6-3TR HBPT-35-063-6-3VR HBPT-35-063-6-3TR</p>		 <p style="text-align: center;">EA-06-062TJ-350 OR EQUIVALENT</p>
<p>HBPR-12-063-6-3VR HBWR-35-063-6-3VR</p>		 <p style="text-align: center;">CEA-06-062UR-350 or Equivalent</p>

- Custom gage patterns can be substituted
- 9 PPM/°F compensation available upon request
- Consult factory for applications using stainless steel shims
- Other resistances available upon request