Warranty

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of one year* from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

• Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within 10 days after receipt of shipment. Claims for lost shipments must be made within 30 days of invoice or other notification of shipment.

Please save damaged or pilfered cartons until claim settles. In some instances, photographic documentation may be required. Some items are time sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.

• WPI cannot be held responsible for items damaged in shipment en route to us. Please enclose merchandise in its original shipping container to avoid damage from handling. We recommend that you insure merchandise when shipping. The customer is responsible for paying shipping expenses including adequate insurance on all items returned.

• Do not return any goods to WPI without obtaining prior approval and instructions (RMA#) from our returns department. Goods returned unauthorized or by collect freight may be refused. The RMA# must be clearly displayed on the outside of the box, or the package will not be accepted. Please contact the RMA department for a request form.

• Goods returned for repair must be reasonably clean and free of hazardous materials.

• A handling fee is charged for goods returned for exchange or credit. This fee may add up to 25% of the sale price depending on the condition of the item. Goods ordered in error are also subject to the handling fee.

• Equipment which was built as a special order cannot be returned.

• Always refer to the RMA# when contacting WPI to obtain a status of your returned item.

• For any other issues regarding a claim or return, please contact the RMA department

Warning: This equipment is not designed or intended for use on humans.

** Electrodes, batteries and other consumable parts are warranted for 30 days only from the date on which the customer receives these items.*

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FORT10g, FORT25

10g, 25g force transducers

INSTRUCTION MANUAL

Serial No._____

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World Precision Instruments

INTRODUCTION

FORT10g and **FORT25** are reliable tools for high precision force measurement. Using balanced semiconductor strain gauges, these 10-gram and 25-gram force transducers produce linear output voltage versus applied force input with very little deflection. It is a temperature-compensated, full-bridge configuration with four high sensitivity semiconductor strain gauges. These transducers have a broad dynamic measuring range and a very high sensitivity. The arms around the sensing leaf are designed to protect the leaf from an accidental touch which will disturb the force calibration and may damage the transducer.

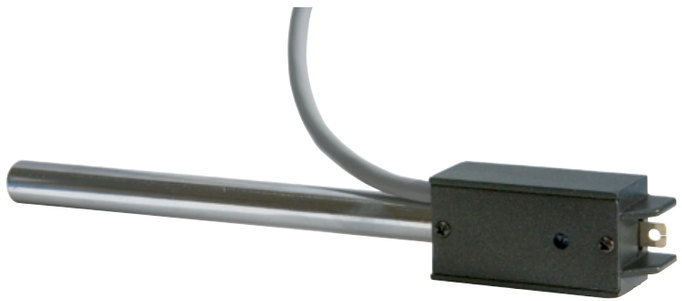

Fig. 1–The FORT transducers have arms around the sensing leaf to protect it.

SPECIFICATIONS

	FORT10g	FORT25
Type	Semiconductor strain gauge with full bridge	
Force Range	0–10g, full scale	0–25g, full scale
Output Sensitivity	1000µV/V/g, nominal	300µV/V/g, nominal
Input & Output Resistance	1500Ω	
Resolution	< 1mg	< 2mg
Resonant Frequency	450Hz	
Linearity Error	0.2%	
Maximum Operating Voltage	10 VDC (-5V ~ +5V or 0 ~ 10V)	
Maximum Applied Force	2× rated full scale force	3× rated full scale force
Drift	< 30mg/hr, thermally compensated	
Dimensions	40 × 22 × 19mm (1.6 × 0.9 × 0.75″)	
Support Rod	∅ 10mm × 109mm (∅ 0.4″ × 4″)	
Weight (excluding cable)	100g (3.5 oz.)	

OPERATION AND USE

Clamp the support rod of the transducer to a firm anchor and apply the forces through a screw or hook mounted in the hole at the end of the flat sensing leaf. The **FORT** transducer transforms the applied force into a proportional voltage.

To calibrate the device with two points, connect the **FORT** tranducer to a signal conditioner such as WPI's Transbridge (WPI #**TBM4M**) or **BRIDGE8** amplifier. In the Differential (Full Bridge) mode, zero the unloaded output, and then apply a known weight (for example, 5g) perpendicular to the flat face of the sensing leaf. The ratio between weight and voltage gives a converting coefficient from voltage to weight. You can convert voltage to grams manually.

When using the **FORT** transducer, pay attention to the following factors:

- The sensor needs about 10 minutes warm-up time at the beginning, as well as several minutes to stabilize after each adjustment.
- Sensitivity will change if the loading force is applied at points on the sensor other than exactly at the center hole. After calibration, keep the force-applied position on the sensing leaf unchanged during measurements.
- Use a suitable amplification gain for the whole measuring range. Changing gain in the middle of measurement will cause system error.
- Do not allow the sustained application of forces to exceed the device's force range (10g). Forces exceeding the absolute maximum applied force rating may permanently damage the device.
- Do not apply more than 10VDC or AC to power the transducer.

Each **FORT10g** or **FORT25** transducer is connected to an 8-pin DIN plug for direct insertion into WPI bridge amplifiers and data acquisition instruments. Should the user require a plug different from the one supplied, the wire connection is shown in Figure 2. Pins 1, 4, 2, and 3 are the relevant connectors for adaptation to non-WPI equipment. Opening up the **FORT**'s male DIN connector is not recommended.

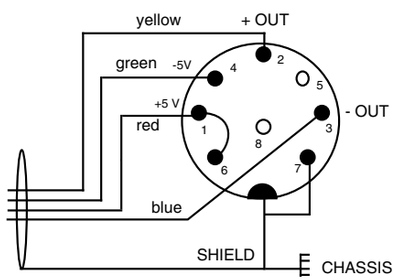

Fig. 2–(right) The transducer male plug, viewed from the solder side, shows that pins 5 and 8 not connected.

OPTIONAL 8-PIN FEMALE DIN #3492

This optional accessory can be used with your WPI transducer to facilitate its adaptation to non-WPI bridge-type amplifiers. You should make certain before proceeding that your amplifier is compatible with the transducer requirements as explained below and on your transducer specification sheet.

The wire connecting information is shown in Figure 3 and the paragraph below should let you quickly reconfigure the WPI transducer to any compatible third-party bridge amplifier. The WPI transducer is supplied ready to use with the **TBM4M Transbridge** or **BRIDGE8** bridge amplifier, and can be quickly connected to a data acquisition system such as WPI's **LabTrax**, using a standard BNC cable. In addition, the transducer can be adapted to most non-WPI bridge amplifiers. Along with the pin-out information for your WPI transducer, you need to know the pin-out information for the connector of the particular bridge amplifier.

We recommend that you first use the female DIN connector as an intermediate step to test the transducer/amplifier combination before permanently removing the 8-pin DIN and replacing it with the required connector (if you wish to make the modification permanent).

WPI transducers require two excitation voltage inputs, a positive 5V input connected to pin 1 and a negative 5V input connected to pin 4. These two input voltages "excite" or power the bridge transducer. Pin 2 carries the positive signal "out" of the transducer and pin 3 carries the negative signal out of the transducer. Figure 3 shows these connections on the solder side of the female 8-pin DIN (WPI #**3492**). The connection between pins 1 and 6 found in the male DIN connector attached to the end of all WPI transducers should not be duplicated on the 8-pin female DIN, since it is useful only in conjunction with WPI bridge amplifiers. Finally, if you do choose to make the modification permanent by replacing the male 8-pin DIN with your amplifier's connector, you must also make sure the shield is connected from the WPI transducer's cable to your new connector.

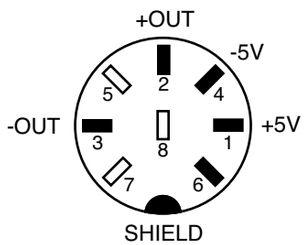

Fig. 3–The female 8-pin DIN adaptor, viewed from the solder side, shows pins 5, 7and 8 are not connected, and pin 6 used only for WPI TBM4M.

NOTE: For your convenience, a 25´ length of the same shielded cable stock (without connectors) is available (WPI #**5385**). A 5´ extension cable (with connectors) is also available (WPI #**3491**).