

IMPORTANT INSTRUCTIONS

DEFENDER™ Rotary Shaft Encoder

FEATURES

- NEMA 4X Stainless Steel Enclosure
- Two Independent Shaft Seals
- Heavy Duty Sealed Bearings
- Reverse Polarity Protection
- Short Circuit Protection
- Low Current Consumption
- Mating Connector Included
- Choice of Output Options
- Infrared LED and SMD Circuitry
- Weathertight Connector w/ gold plated contacts

APPLICATIONS

- Paper and Pulp Processing
- Chemical Plants
- Machine Tools
- Food Processing
- Heavy Equipment
- Textile Mills



CAUTION

**IMPROPER HANDLING OR
USE MAY DAMAGE ENCODER**

Please:

Don't exceed the proper operating voltage.

Don't tap or pound a fitting onto the shaft.

Don't drill holes in the shaft or housing.

Don't leave cover open.

Don't attempt to oil or lubricate bearings.

* For additional application and technical information
please call FSI.



WARNING

**FSI Products are not intended
for use as final safety devices.**

Note: Designs incorporating controls of any kind should be
carefully considered to provide for their eventual failure.

SPECIFICATIONS

Input

Voltage: 5 or 12-28 VDC, others available
Current: 45 ma. @ 15 VDC typical

Output

Squarewave 50/50 duty cycle
0 - 20,000 pulses/sec.

Mechanical

Housing: 304 Stainless Steel
Shaft Rotation: Either direction
Shaft speed: 6000 RPM max. *
Bearings: Teflon® sealed heavy duty ABEC 3
Load: 30 lbs. radial *
10 lbs. axial *

Temperature Range: -30° to 165° F (-35° to 75°C)

* Please consult factory for details, technical bulletins, and see the safety and warranty sheet for additional information.

DESCRIPTION

The **DEFENDER** series is a NEMA 4X, rotary optical incremental shaft encoder designed with high precision mechanical and opto-electronic components. It is enclosed in a sealed rugged 304 stainless steel housing designed to operate in the most severe environments. Infrared LED and SMD circuitry provides high noise immunity. Two independent shaft seals prevent internal contamination due to moisture and dust. Teflon® sealed ABEC 3 with grease lube (standard) provide for heavier

shaft loads. Single channel, index pulse, quadrature, and other special outputs are available with standard resolutions up to 1270 PPR. Over four decades of engineering and manufacturing experience is embodied in every FSI encoder. FSI is committed to manufacturing quality products and providing complete customer satisfaction!

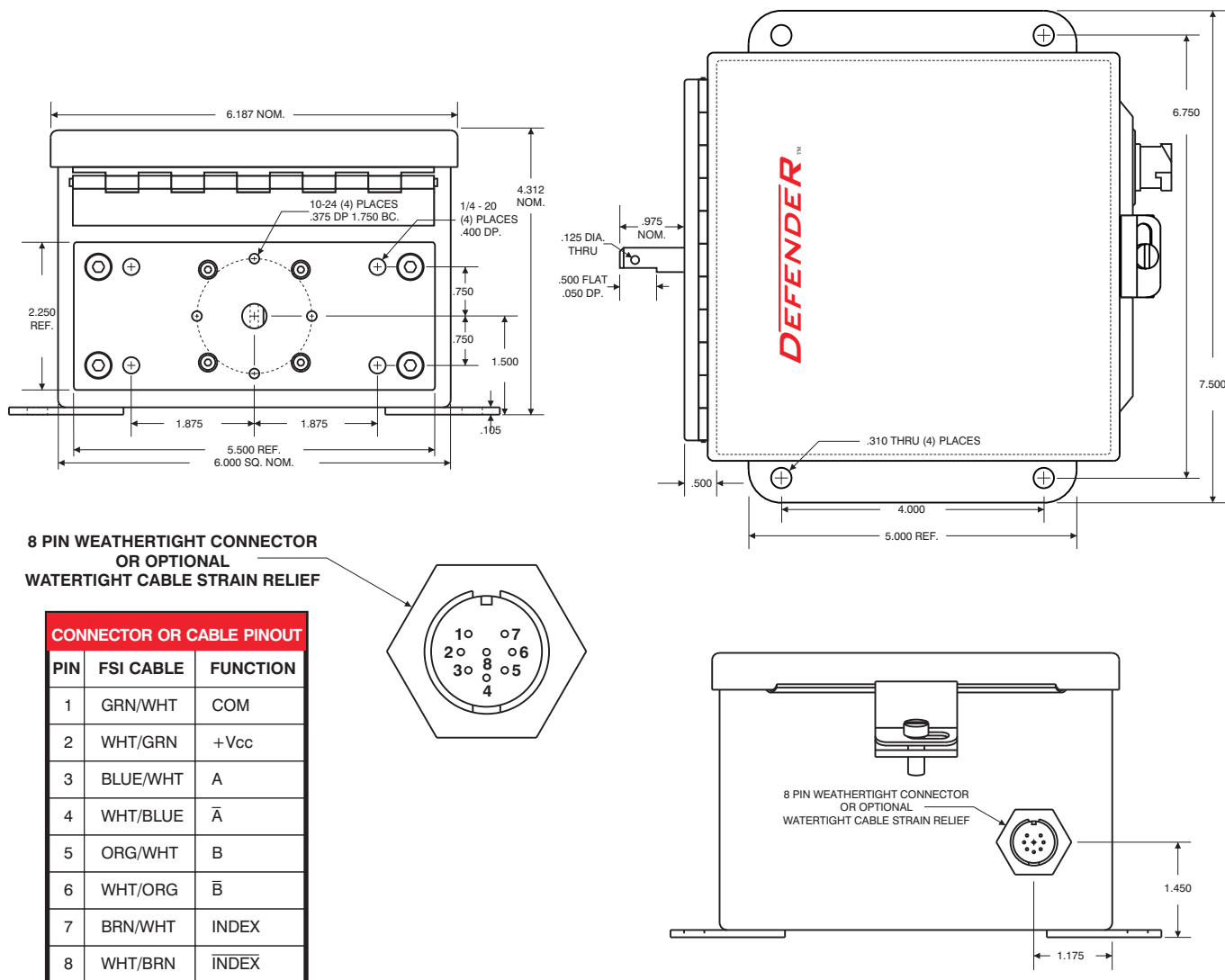


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IMPORTANT NOTICE: Most of FSI's products are designed for general and not for specific applications. Because of this, we usually are not aware of how they eventually will be used. However, they are frequently employed in controlling automatic machinery or processes.

Although FSI makes products of high reliability, every product, given enough time, can be expected to fail. Statistically, devices can fail after a short period of time or a long period of time or anything in between. In essentially all cases, failure means (1) failure to provide a logic signal or power to an electrical load when it should or (2) the providing of such a signal or power when it should be absent. Less often, failure means failure to meet some other specification. But, in all cases, it means to do something unwanted or unexpected.

Since the failure of automatic machinery or processes can create hazardous conditions for personnel or property, whatever the definition of failure might be, it is necessary to consider the consequences of failure and design the application in which the FSI product is used so that failure will not create a hazard to personnel or property. The design must insure that any failure will result in a fail-safe condition and there will be no danger to personnel and/or property involved in the use of the product. *FSI products are not intended for use as final safety devices.*

Designs incorporating controls of any kind should be carefully considered to provide for their eventual failure.

The use of this product is beyond the control of the manufacturer, no guarantee or warranty, expressed or implied, is made as to such effects incidental to such use, handling or possession or the results to be obtained, whether in accordance with the directions of the claimed so to be. The manufacturer expressly disclaims responsibility therefore. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing laws and/or patents covering any material or use.

Warranties of Sale, disclaimer thereof and limitations of liability are covered exclusively by FSI's printed warranty statement for controls. These instructions do not expand, reduce, modify or alter FSI's warranty statement and no warranty or remedy in favor of a customer or any other person arises out of these instructions.



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