Bokam Engineering Inc.

Expanding technology limits through innovation

News Release

BOKAM ANNOUNCES THE FIRST FULLY SUBMERGIBLE, INPUT DEVICE JOYSTICK PRODUCT LINE

Santa Ana, CA ……., BOKAM ENGINEERING INC., a leader in new sensor development introduces the latest addition to its solid steel multi-axis force measurement and motion control product line with the introduction of the worlds first fully submergible, non-audible, non magnetic solid state input device product line. Developed for the US Navy with the goal to create a truly diver rated, non-audible, and non magnetic input device that can be used in a variety of applications with a simple modification in signal conditioning electronics. The products in the Neptune Series have under gone rigorous testing by both the US Navy diving teams and other test labs. The devices can be subjected to any environmental conditions and were based on customer requirements for inserting remote pointing devices and instrumentation into applications where the environment had prevented the use of conventional joysticks, controllers, and switches. The insertion of these devices into a diver instrumentation application has increased the reliability of its host system by 100%. The Neptune series combines the Bokam's award winning technology of the Aurora and DX-400 series of products (see list of awards for details) with new materials and material application advances developed at Bokam within the past several years. The solid steel welded construction of the body and sensing element make the device not only impervious to environments and salt water submersion and fully explosion proof, but also allow it to survive and thrive in the abusive, highly demanding and unpredictable military, mining and off-shore environments. The product line has been used to put together a variety of systems and control panels that are available from Bokam.




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SENSOR CONSTRUCTION AND TECHNOLOGY:

In this sensor design we start with a robust solid steel base, machined to fit the customer's applications and interface requirements, and create an elaborate network of conductive strain sensitive elements on a sealed steel surface. This method assures that the only part of the sensor that comes in contact with the environment is the machined stainless surface. The strain sensitive materials located on the back of the sensor are capable of measuring even microscopic strain in the sensor base and resolve the applied force into three distinct outputs proportional to the X, Y, and Z component of the force vector. Due to the elastic nature of the steel surface and due to the absence of a bond or glue line between the strain sensitive materials and the stainless surface, the output of these sensors is significantly higher than that of their ceramic or even discrete strain gage on metal counterparts. The sensor consists of a monolithic non magnetic steel element with machined mounting ring, sensing membrane and perpendicular post for translation of input force into membrane strain. The strain sensitive artwork/circuitry located on the sensing membrane consists of a bridge circuit that changes resistance and output due to the elongation of the membrane surface. The sensing element is welded into an interface housing made of the same non-magnetic steel and containing the o-ring and the tapped interface. That signal from the sensor is proportional and linear to the applied force. In motion control applications, this device allows the user to position and control the rate of the intended object's motion by simply applying a force with his/her finger or palm on the top of the post. In switching application the device is used to change an electronic state or issue a binary output. In a cursor control application the device is used to control the position of a cursor on a computer screen. The variety of the applications are governed by the selection of the signal conditioning electronics that are application or usage specific and can be mounted behind the device.