

News Release

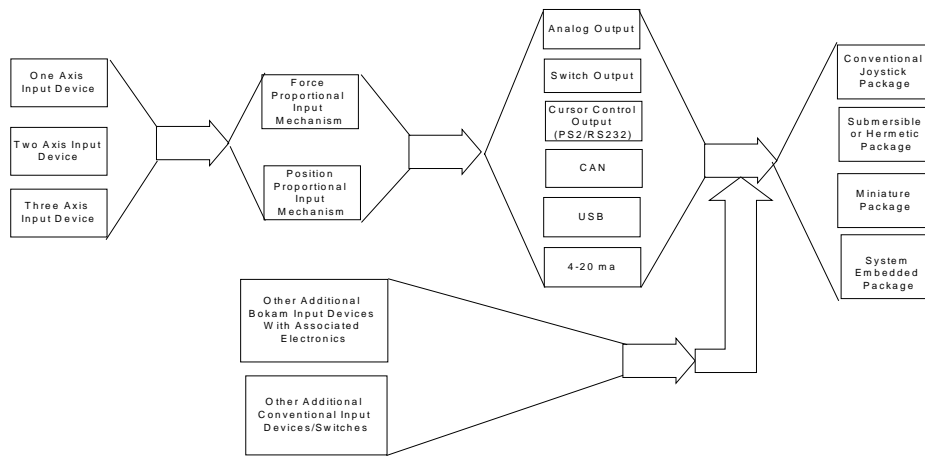
BOKAM ANNOUNCES THE INTRODUCTION OF A MODULAR FORCE PROPORTIONAL/POSITION PROPORTIONAL JOYSTICK FOR HEAVY INDUSTRIAL APPLICATIONS

Santa Ana, CA, BOKAM ENGINEERING INC., a leader in new sensor development introduces the latest addition to its solid steel multi-axis motion control product line with the adaptation of its force proportional joystick technology to position proportional or moving stick packages. Developed specifically for the heavy industrial and rugged environment applications the joystick combines the reliability of Bokam's Force Proportional product lines with a newly developed input mechanisms that allows the input lever to move. This allows the OEM's that have applications where the operators that are used to the feel of position proportional devices to introduce a product that does not have any moving or rubbing parts and provides all of the advantages and life expectancy of the force proportional sticks. The modular configuration also allows for the same interface package to come in either a force proportional or a position proportional modules. Modular signal conditioning electronics compartment located below the main sensing element is expandable allowing for a multitude of additional features and variations in input device outputs. The sealed metal signal conditioning electronics compartment isolates the electronics from EMI/RFI interference. The solid steel sensing element combines Bokam's award winning embedded strain gage technology and designs with a unique mechanical mounting and interface module that serves as a building block for a variety of requirements across applications and OEM platforms. A fully submersible unit with a solid steel welded construction body and sensing element and embedded underwater and mine safety rated internal connectors is also available. .



THE MODULAR DESIGN

The product line is designed so that it is modular and adaptable to a variety of applications and functions. The Joystick product line comes in a variety of outputs ranging from Analog to USB to CAN. Additional secondary features can be added to the submersible grip assembly with its variations or outputs.



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 steel element with machined mounting ring, sensing membrane and perpendicular post for translation of input force into membrane strain. The strain sensitive 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 trapped in an anodized aluminum. That signal from the sensor is proportional and linear to the applied force and/or position of the input lever in the position proportional configurations.

Miniature multi axis input devices utilizing the same robust technology can be mounted in the grip with their signal conditioning electronics mounted in the modular electronics compartment internal to the joystick body.

The input lever interface has been designed to fit most standard grips available from a verity of vendors. Bokam is currently supplying joysticks with Bokam supplied grips and or customer supplied or specified grips.

The joystick comes with a variety of modular signal conditioners (located inside the stick) the electrical output options include:

- Analog (0-5V or customer specific voltage levels)
- PWM
- USB
- CAN
- 4-20 mA
- RS232/PS2

By using the selection and modular flow charting the customer can use the modular building blocks to build up any joystick configuration to suit the specific application.

