

# **APPLICATION SOLUTION CUB5 #01**

## **PAPER TUBE SPEED MONITORING APPLICATION**

A paper products' manufacturer wants to upgrade an old paper tube-forming machine. Adding an RPM indicator will allow the operator to better control the paper tube diameter. The tubes are cut to raw lengths and shipped to the appropriate packaging facilities. The tubes will become the cores of toilet paper rolls, aluminum foil rolls, saran wrap, etc.

## **PRODUCTS USED: CUB5B000, MLPS1000, PSAC000**

The CUB5B000 with red backlighting was chosen because of the poor lighting conditions on the plant floor and the ease of programming. Also, included in the system are the PSAC0000 sensor and a MLPS1000 power supply since DC power was not available on the machine.

## **HOW IT WORKS**

The RPM of the feed head will determine the diameter of the paper tube being formed. The CUB5 will give a visual display to the operator so they may adjust the RPM when desired. Through their past experience with the machine, they know the RPM requirements for the proper paper tube diameters needed. Normal feed head RPMs may range between 10 RPM to 60 RPM. Utilizing the machines AC power, the MLPS power supply installs on the rear of the CUB5 to supply DC power for the display and sensor.

The PSAC is used to sense the four bolt heads on a collar of the feed head. The speed of the feed head is determined by using the Rate Indication feature of the CUB5 counter. The output from the PSAC sensor is connected to Input A of the counter. The power for the sensor is connected to the power common and the +9 - 28 VDC terminals.

The CUB5 is quickly programmed to display the actual RPM of the machine based on the input from the PSAC sensor. Because Revolutions Per Minute is desired, 60 is entered as the Rate Display Value in the programming. In this case, the Rate Input Value (hertz) would be the same value as the number of input pulses of one rotation (four) of the feed head.

## **DESIGN ADVANTAGES**

With an accurate display of the actual RPM of the feed head, the operator easily adjusted the machine to the desired RPM for each paper tube diameter. Not only did this increase efficiency and decrease waste at their own facility, but the packaging facilities using the paper tubes in their products also noticed the difference due to the increased accuracy of the paper tube diameter.

## ADDITIONAL CAPABILITIES

Option cards could be added to the CUB5 for serial communications to a data collection system, large display or PC configuring software. Over/under alarm could be added to warn of possible speed problems.

## DIP SWITCH OR JUMPER SETTINGS

All are at factory settings.

## PROGRAMMING (ONLY NONFACTORY SETTINGS SHOWN)

Press SEL before entering program mode to get r for rate on the display.

### 2-rAte

RAtE Enb : YES

RAtE dP : 0

RAtE dSP : 60 (because it is per minute)

RAtE INP : 4.0 (4 pulses per rev or 4 Hz when using DSP of 60.)

Lo-Udt : 1.0

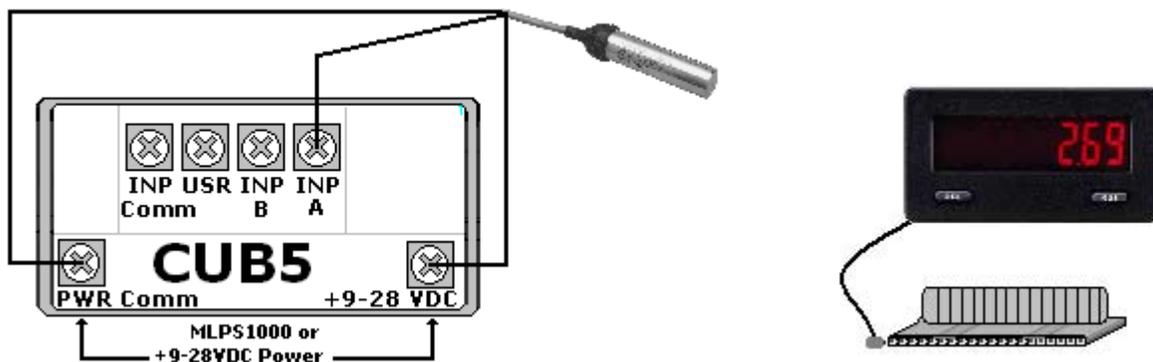
HI-Udt : 2.0

### 3-dSPLAY

SEL Enb : NO (disables count display)

## WIRING DIAGRAM

All wiring must be according to the installation guidelines listed in the product's specifications.



This application note is intended to be an example. Your specific application may require changes in products, programming and/or wiring. For specific assistance, you may contact your local Red Lion products supplier or Red Lion Controls Technical Support at 717-767-6511.