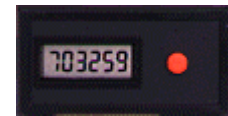


red lion

COUNTERS



Three Types of Counters

Totalizing Counters

A meter which accumulates pulse counts. Also these counters do not outputs.

Cub5 Counter



- **Two Counters and a Rate Indicator in ONE Package**
- **8 Digit Display Available in Green, Red, or LCD**
- **Seven Programmable Counting Modes**
 - Add/Add
 - Add/Sub
 - Count Up/Down
 - Quad X 1
 - Quad X 2
 - Quad X 4
 - Dual Count
- **Each Display Separately Scaleable**
- **9-28 VDC Operation (MLPS allows 115/230 VAC operation)**
- **NEMA 4X/IP65 Front Panel**
- **Time Interval Rate Calculation**
requires as little as one pulse per unit of measure !
- **Programmable User Input**
- **High Frequency Input-up to 20Khz**
- **Small package**

CUB 1 & 2 Series

- **Field Connectable for Reset**
Front panel reset, Remote reset, or Both
- **Count Speeds Up to 5kHz**
- **Wide Temperature Range**
- **NEMA 4/IP65**
- **Power Source**
Two 1.5V N type alkaline cells or 3V lithium battery

CUB 3 Series

- **Available in Two Version**
Front panel reset or Remote reset
- **Up to 100 counts per second**
- **Low cost/ High performance**
- **Power Source**
Two 1.5V N type alkaline cells or 3V lithium battery

CUB 4 Series

- **Display**
6-digit or 8-digit, Reflective, Yellow/Green, or Red LCD Backlighting
- **Inputs**
Count Speed Up to 5kHz
Contact, Voltage, Logic input units
- **Field Connectable for Reset**
Front panel reset, Remote reset, or Both
- **NEMA 4X/IP65**
- **Power Source**
3V lithium battery (Backlighting 10-28Vdc)

CUB 7 Series

- **Display**
8-Digit Reflective, Yellow/Green, or Red Backlighting
- **Input**
Count Speed Up to 10kHz
Contact, Voltage, Logic input units
- **Programmable Prescaler Unit Available**
- **Field Connectable for Reset**
Front panel reset, Remote reset, or Both
- **NEMA 4X/IP65**
- **Power Source**
3V lithium battery (Backlighting 10-28Vdc)

APLT (Apollo Totalizing Counter)

- **Display**
6-Digit or 8-Digit LED
- **Input**
Dip switch selectable
Count speed up to 10kHz
- **Control Inputs**
Up/Down Control, Remote Reset, Front Panel Reset, Inhibit, Store
- **Field Connectable for Reset**
Front panel reset, Remote Reset, or Both
- **NEMA 4/IP65**
- **Sensor Power Output (12 Vdc)**
- **Power Source**
AC -available in 115 or 230 VAC
DC -11 to14 VDC

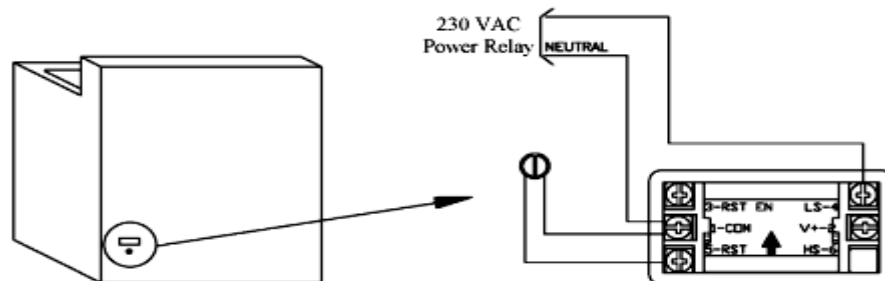
SCT

- **Display**
6-Digit LED
- **Input**
Count speed up to 10kHz
- **Field Connectable for Reset**
Front panel reset, Remote Reset, or Both
- **Control Input**
Up/Down control, Remote reset, Inhibit, Store, Display blanking
- **Power Sources**
115 Vac or 12 Vdc

EXAMPLE

LAUNDRY FACILITIES APPLICATION

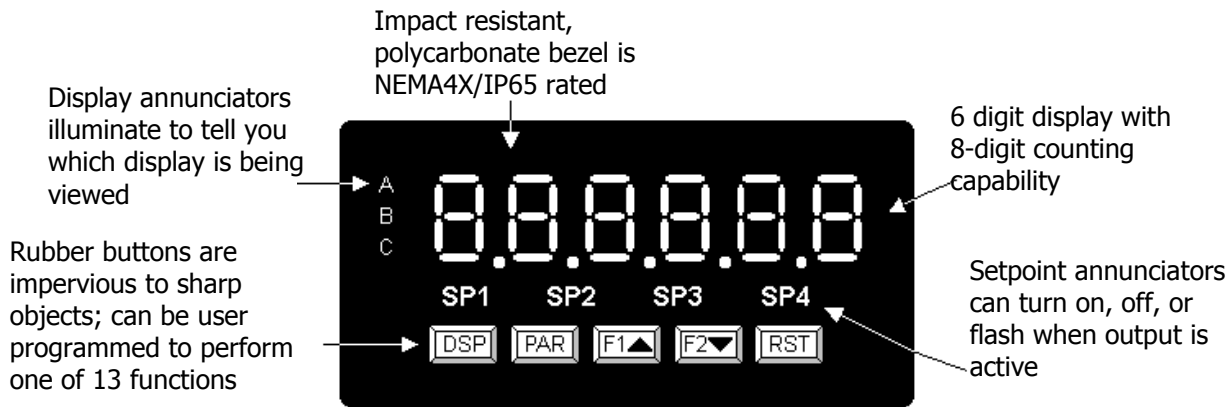
A family operated laundry installed a CUB7W000 (Positive Image Reflective) on each of the 25 industrial washing machines in one of their laundry facilities. The CUB7W000 was wired into the washing machine's 230VAC power relay and increments one count each time the machine begins a washing cycle. The count is recorded and reset at the end of each month. Reset is accomplished with an external key switch. The count value is used to compare the number of times the machine was used against the money collected for that machine. In addition the usage data collected is invaluable in determining the location of the high traffic areas because of tables or door locations. Rotating the machines within the facility maximized the mechanical life of all machines.



Preset Counters

Counters that have presets and outputs associated with their count value. These units allow for manual or automatic resets of the count value








NEW PRODUCT NOTICE **Model PAXI-1/8 DIN DUAL COUNTER/RATE** **INDICATOR/SERIAL SLAVE**



Features

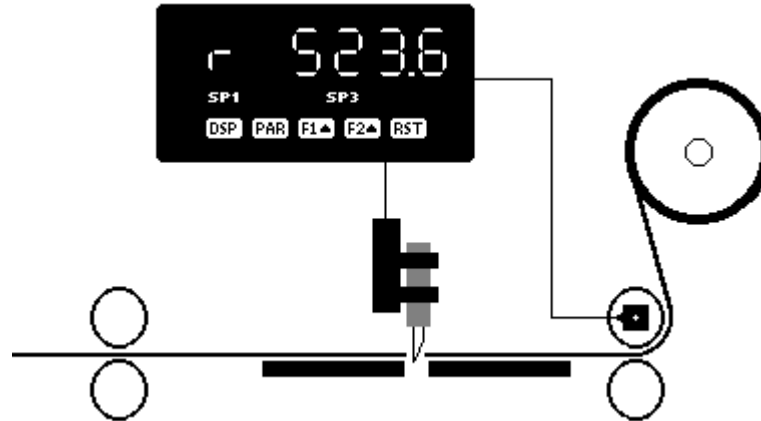
- Dual independent counters (Counter A & Counter B)
- Rate display programmable for input A or B
- Display C programmable for input (A-B), or (A+B)
- Display C programmable for Serial Slave display
- Accepts Two Quadrature Signals
- Display can reset to different values at each preset
- Field installable Analog Output, 2 or 4 Setpoint Output, and Communication Cards

Benefits

-  Use as two counters, or for count/batch, count/total, good part/bad part, etc.
-  Provides indication of process speed, as well as alarm outputs
-  Allows PAXI to tackle sophisticated applications (see next page for application idea)
-  PAXI can be used as a remote slave display for RS232 or RS485
-  Two accurate "cut-to-length" counters in one; dual position indicators, etc. (see next page for application idea)
-  Allows the PAXI to be used in 0-360 degree applications
-  Can be adapted for any application requirement

PAXI Applications

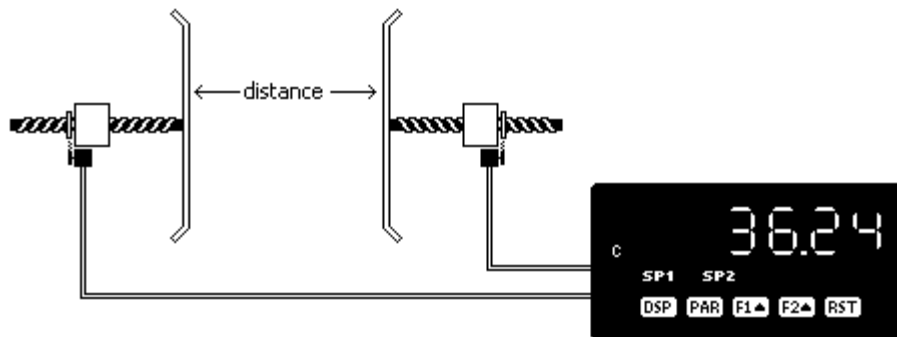
Cut-to-Length Application



A customer that extrudes rubber hose had a requirement for a counter/rate indicator. The indicator needed to be capable of counting in feet, and of showing the rate in feet per minute. The operator needed the ability to enter a setpoint, which would actuate an output when the predetermined length of hose was reached. The output would be used to shut down a motor drive used in the rewind process.

The PAXI, along with a PAXCDS setpoint card, is all the customer needs for this application. Once programmed, the operator only has access to the particular values that the programmer decides upon; in this case, SP1. By pushing the DSP (display) button, the operator can monitor the machine speed.

Edge Guide Application



For customers that want to measure the distance between two moving objects, the PAXI offers an easy solution. The application below demonstrates how the PAXI can be used to show the distance between two "guides," a common requirement in the textile industry.

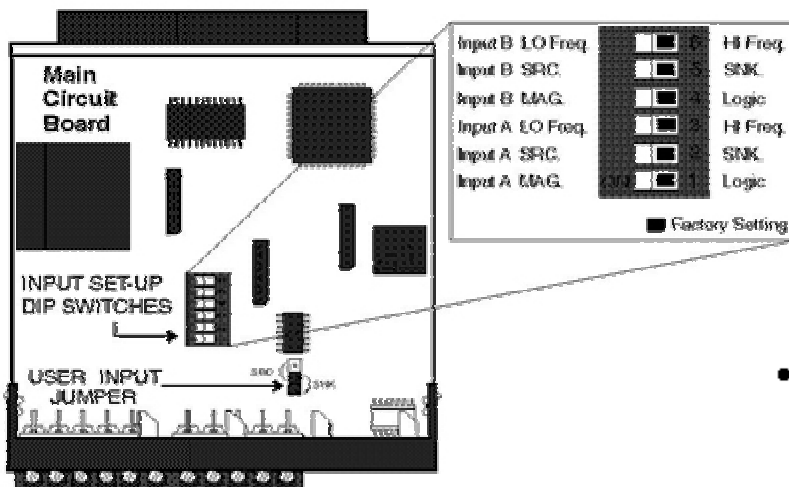
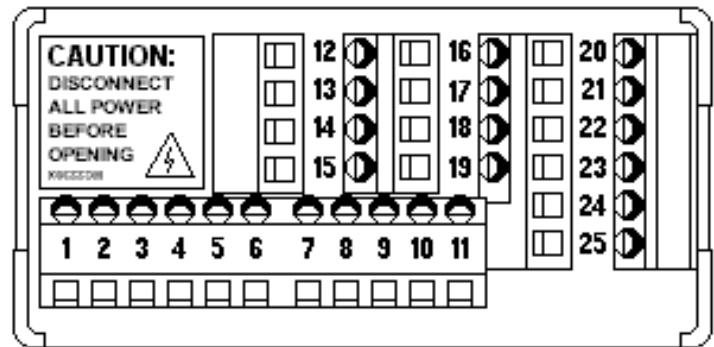
If only one guide was adjustable, any quadrature counter would work. But when both guides are adjustable, a dual quadrature counter is necessary. By programming display C to add inputs A and B together, the PAXI can indicate the distance between the guides. Displays A and B can be viewed to show the individual positions of each guide.

PAXI – 1/8 DIN Count/Rate/Serial Slave Panel Meter



- 6-digit LED display (allows 8-digits for counting)
- NEMA 4X/IP65
- CE approval
- Non-volatile memory
- Scaling

- Programmable Function Keys/User Inputs
- Program lock-out ability (Security code protected)
- Prescaler output
- Programmed through the front buttons or RLCPro Windows-based software (SFPAX)
- Input frequencies up to 34 KHz



- Dip switch selectable for a variety of inputs

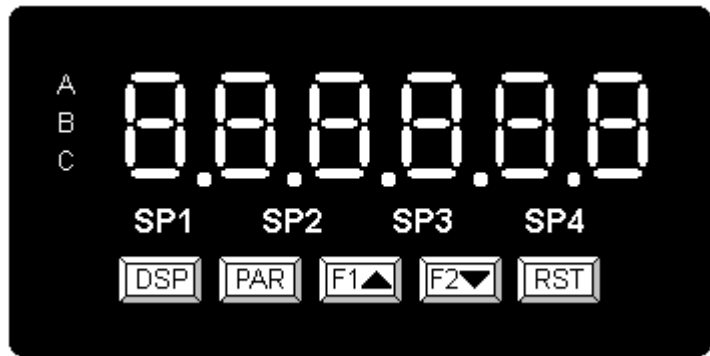
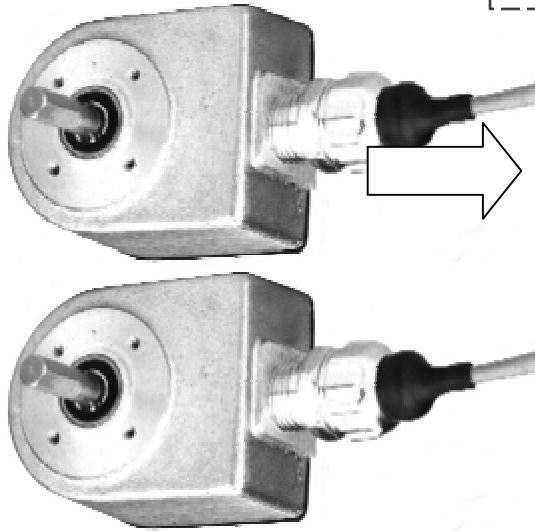
PAXI

1/8 DIN Count/Rate/Serial Slave Panel Meter

~~~~~ for **countless** applications ~~~~~

# Indication

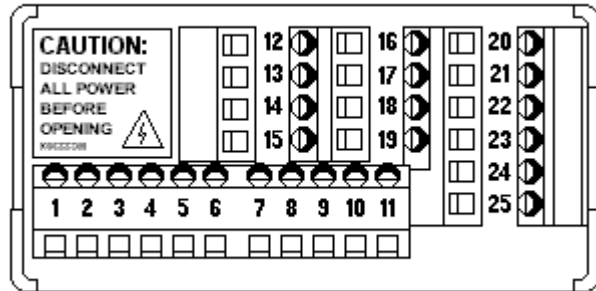
Dual counter capability (even dual quad)  
C display for separate scaling, ADD, SUB, or serial slaving  
Time interval rate indication  
Hi/Lo (Min/Max - Peak/Valley)



# Inputs

One or two digital count pulse trains  
(single channel or quad)

Serial information via RS232, RS485,



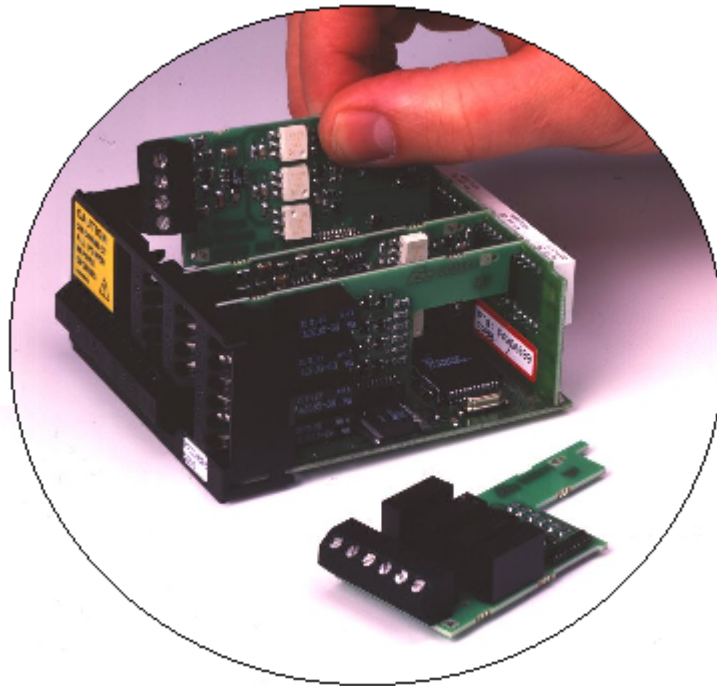
# Outputs

Relay or transistor setpoints  
Analog output  
Serial Communications via RS232,  
RS485



## ***Options available (through plug-in cards):***

As with all of the PAX panel meters, the PAXI can accept one Setpoint Card, one Analog output card, and one Serial Communications Card. Once purchased, it is just a matter of plugging the card into the PAX meter. The unit will detect the option at power-up and enable the associated software. These option cards can be purchased when buying a unit or at some point in the future. This is very convenient for future expansions because no longer is it required that a whole new unit be purchased to get the options desired!



***Alarm outputs*** – dual relay, quad relay, quad sinking transistor,  
or quad sourcing transistor (PAXCDS\_0)  
***Analog output*** – 0-10VDC and 0(4)-20mA (PAXCDL10)  
***Serial Comm.*** – RS232, RS485 (PAXCDC\_0)

### **Other options:**

Powered on either 85-250VAC or 11-36VDC  
6-digit LPAX (pictured on next page) with MPAXI modules (also in AC or DC)

# **PAXI** *1/8 Din Count/Rate/Serial Slave Meter*

- **6-Digit LED Display**

Allows up to 8-digits for counting alternating between 2-digits and 6-digits  
Up to 3 Count Display and Rate Indication plus Max. and Min.  
Scaling for each display

- **Two Inputs**

A & B Inputs  
Dual Count Quad Inputs

- **Programmable Function Keys / User Inputs**

Function keys and user inputs can be programmed for 1 of 13 function

- **Two Ways To Program The Unit**

RLCPro windows-base software (SFPAX)  
Through the front panel

- **Setpoint Cards**

Dual form-C relay card (PAXCDS10)  
Quad form-A relay card (PAXCDS20)  
Quad solid states sinking transistor (PAXCDS30)  
Quad solid states sourcing transistor (PAXCDS40)

- **Analog Output Card**

Ranges 0-10V, 0-20mA or 4-20mA

- **Communication Cards**

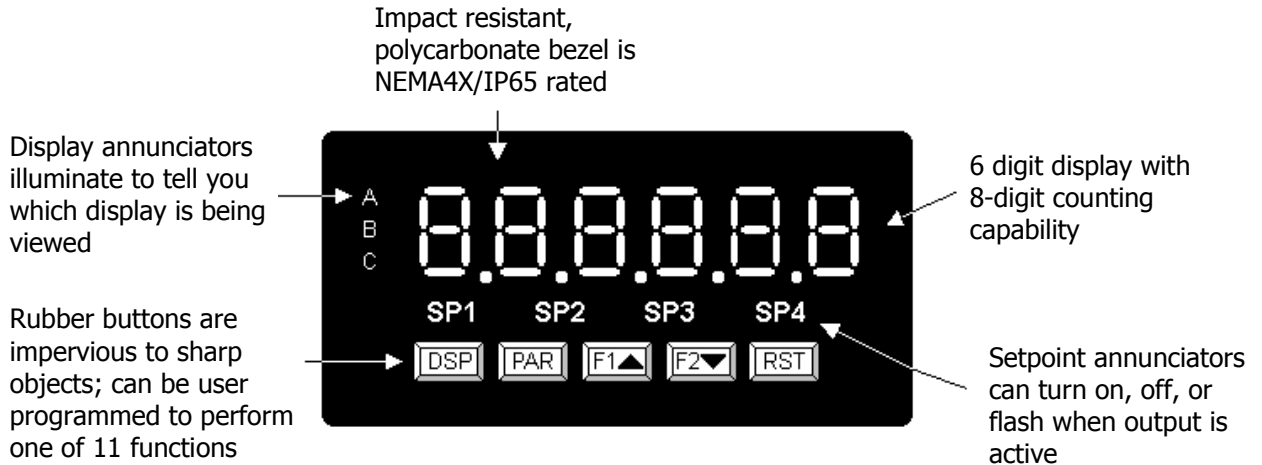
RS485 serial communication (PAXCDC10)  
RS232 serial communication (PAXCDC20)

- **Prescaler Output**

- **NEMA 4X/IP65**

# NEW PRODUCT NOTICE

## Model PAXC-1/8 DIN DUAL COUNTER



## Features

Dual independent counters  
(Counter A & Counter B)

Display C programmable for input (A-B), or (A+B)

Accepts Two Quadrature Signals

Display can reset to different values at each  
preset

Field installable 2 or 4 Setpoint Output

## Benefits

👉 Use as two counters, or for count/batch,  
count/total, good part/bad part, etc.

👉 Allows PAXI to tackle sophisticated applications  
(see back for application idea)

👉 Two accurate "cut-to-length" counters in one;  
dual position indicators, etc.  
(see back for application idea)

👉 Allows the PAXI to be used in 0-360 degree  
applications

👉 Can be adapted for any application requirement

# **PAXC -1/8 Din Counter Panel Meter**

- **6-Digit LED Display**

Allows up to 8-digits for counting alternating between 2-digits and 6-digits  
Up to 3 Count Displays  
Scaling for each display

- **Inputs**

A & B Inputs  
Dual Count Quad Inputs Accepted

- **Programmable Function Keys / User Inputs**

Can set function keys or user inputs to do 1 of 11 function  
F1 and F2 keys can also be set for a secondary function

- **Input Frequencies**

Up to 34kHz

- **Programmed Through The Front Buttons**

Can not use RLCPro to program unit

- **Non-Volatile Memory**

- **NEMA 4X/IP65**

- **No Communication Card Accepted**

- **No Analog Card Accepted**

- **Setpoint Cards Accepted**

Dual form-C relay card (PAXCDS10)  
Quad form-A relay card (PAXCDS20)  
Quad solid states sinking transistor (PAXCDS30)  
Quad solid states sourcing transistor (PAXCDS40)

## **CUBC** (single preset counter)

- **Two Version**  
Single preset or single preset w/ batch indication
- **Input**  
Signal input switch selectable for HI or LO frequency operation  
Accepts input count rates up to 12kHz
- **Programming Via Front Panel**
- **Field Connectable for Reset**  
Front panel reset, Remote reset, or both
- **Output**  
Programmable Timed Output  
Form-A relay
- **NEMA 4/IP65**

## **LYNX Series**

- **Two Version**  
Single or Dual Presets
- **Input**  
Dip switch selectable
- **Outputs**  
Programmable timed outputs  
Form-C relay  
Solid state current sinking output
- **Field Connectable for Reset**  
Front panel reset, Remote reset, or both
- **NEMA 4X/IP65**

## **LIBRA Series**

- **Two Version**  
Single or Dual Presets
- **Input**  
Dip switch selectable
- **Control Inputs**  
Remote reset, Program disable, Up/Down control
- **Outputs**  
Programmable timed outputs  
Form-C relay  
Solid state current sinking output
- **NEMA 4X/IP65**

## **C48C (1/16 din counter)**

- **Four Version**  
Single preset, Dual preset, Three preset batch, or Dual preset w/prescaler output
- **Input**  
A & B inputs  
Quad sensing (up to 4 times)
- **Programmable**  
Through front panel or RLCPro w/RS485 serial communication option units
- **Programmable User Inputs and Front Panel Function Key**  
Can set function key or user inputs to do 1 of 14 function
- **Outputs**  
Field replaceable relays  
Solid state, Form-A relays
- **NEMA 4X/IP65**

## **GEMINI Series**

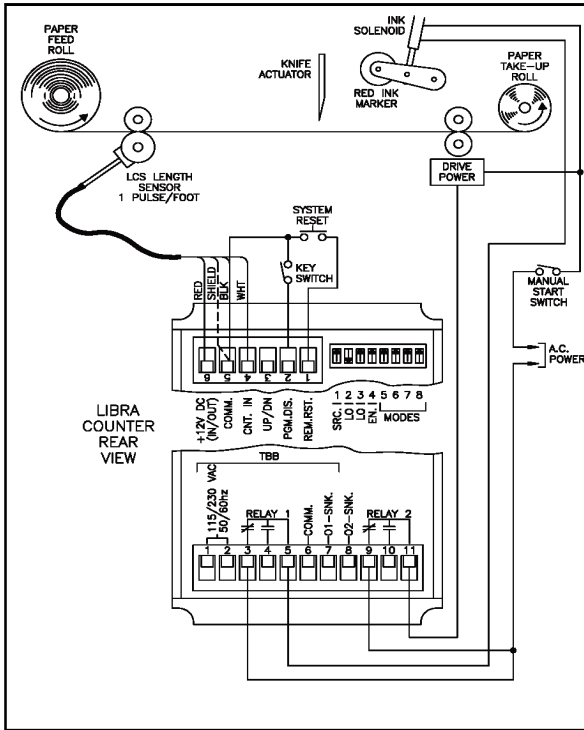
- **Five Version**  
Gem1000 (single output)  
Gem2000 (dual output w/optional 20mA current loop communication)  
Gem3300 (dual output batch counter w/ optional 20mA current loop communication)  
Gem4100 (counter/rate or dual counter single output)  
Gem4200 (counter/rate or dual counter dual output w/optional 20mA current loop communication)
- **Inputs**  
Can do quadrature sensing  
Input scaling
- **Programmed Through The Front Panel**
- **Outputs**  
Solid states current sink output  
Field replaceable form-C relay
- **NEMA 4/IP65**

## **Legend Series**

- **Two Version**  
Legend (single preset, dual preset, four preset batch, six preset)  
Legend Plus (four preset batch, six preset, four preset foot-inch length counter)
- **Input**  
A & B inputs  
Quad sensing
- **Programmable**  
Through front panel or RLCPro
- **Programmable Control Inputs**
- **Outputs Can Be Assigned To Count Or Rate**
- **Relays Outputs (field replaceable)**
- **Legend Plus Can Do Programmable Message Capabilities**
- **NEMA 4X/IP65**

# EXAMPLES

## APPLICATION FOR DUAL LEVEL PRESET LIBRA COUNTER



### THE CONTROL OF A PAPER ROLL MANUFACTURING PROCESS

In a paper production process, the requirement exists to control a solenoid which places a red ink marking at the end of a roll of printing paper (*this marking is used to indicate when the end of the roll is near*). The unit must also stop the system when the proper amount of paper is wound onto the roll. Then, the cutting knife is manually actuated which shears off the paper. The full roll is taken off the spool and a new roll is loaded on. The system is then started up again. The Libra two preset counter satisfies these requirements.

The Libra set-up is as follows: Preset 1 is set to 30 (30 ft. {9 M} is desired length of red marking at the end of the roll). When the system is started, the ink marker solenoid is activated which starts marking the paper (*this is connected to the normally closed contact of relay 1*). When 30 is reached, output 1 fires which de-energizes the ink solenoid. Preset 2 is set to 3400 feet. (3400 ft. {1036 M} is the total desired length of paper wound onto the roll). When the unit reaches 3400 feet, preset 2 fires which de-energizes the entire system (*the system control is connected to the normally closed contact of output 2*). The operator then activates the knife, which shears off the paper and at the same time, the Libra counter is reset and is ready for the next cycle.

An LSC (length sensor) with a 1 pulse/foot wheel is connected to the Libra counter. The red (+12 V), black (COMM.) and white (COUNT) of the LSC are connected to the Libra "+12 VDC", "COMM.", and "CNT. IN" terminals respectively. The "PGM. DIS." terminal is left unconnected so preset values can be changed (*a key switch can be used if desired*). "RESET" is connected to the knife actuator so when the knife shears off the paper, the Libra counter is reset. DIP switch 1 is set to current sinking to match the LSC output. DIP switch 2 is set to "LO FRQ." because the count speed cannot be greater than 100 Hz. DIP switch 3 is set to "HI BIAS". The front panel reset enable switch (DIP switch 4) is set to "DIS.". All the mode switches are set "UP", which is mode 0 (*Latch Outputs at Presets and Manual Reset to Zero*). The relay contacts are connected as previously discussed.

### Batch Counter

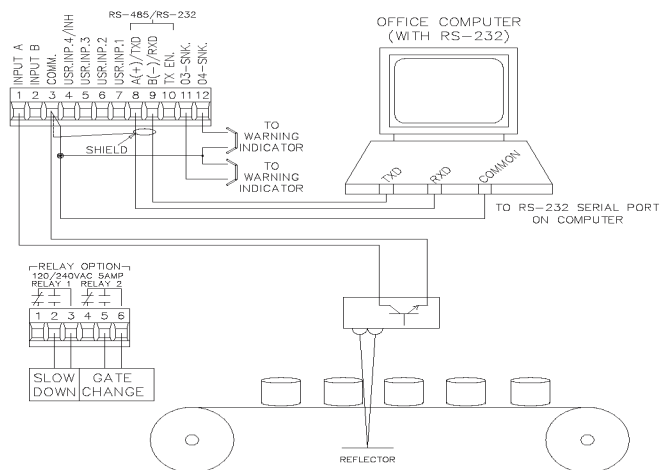
A second internal counter which increments every time the Process count resets (CubCB; GEM33; C48CB; LGB; LGPB). *Ex:* Every six cans the process resets to zero, and the batch count increments by one, counting the number of six packs.

Determining the desired operation is essential to selecting the right unit for the application.

### MODEL LGPB APPLICATION

A local canning plant wishes to improve the display and control capabilities of its nine process lines. There is a requirement to add message interaction for the operators during process operation. The following application facts and requirements have been specified by the plant engineer.

- The cans are sensed by a photo-electric device specially suited for can manufacturing. The device produces one pulse per can.
- The can count for the process of boxing the cans is the first requirement. The can count is never changed, there are always 24 cans to each box. An output is required at 20 cans to slow the line temporarily until the second output is turned on. The second output changes the gate direction to begin the next grouping of 24. The second output has a time delay output of 2 seconds. After the time delay, both outputs are reset and ready for the next process cycle.
- A count of the number of batches is required for each 8-hour shift. This count is recorded and reset by the manufacturing computer.
- A total count of cans produced per 24-hour period is required. This count is also transmitted to the manufacturing computer, and reset as required via the communication link.
- A display of cans per minute is required with minimum and maximum speed limits. Output 3 activates below 100 counts per minute and Output 4 activates above 500 counts per minute.
- The four desired displays are process, batch, total, and rate. These are to be scrolled via the front panel.
- The customer also wants the following messages displayed when the listed events occur:  
Output 3 - Line #4 Slow  
Output 4 - Overspd STOP! (Wants this display to stand out and have top priority)  
Proximity 1 - Check Label Glue  
Proximity 2 - Check Top Supply  
Proximity 3 - System Fault! Stop Line #4! (Wants this display to stand out and have top priority)



- Once the unit is set up, the only front panel access should be for a reset of the process count and viewing of the displays.

The following page is a chart of the necessary programming for the Legend Plus unit.