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Bulletin No. CUBXP-F
 Drawing No. LP0025
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MODEL CUB 1 & 2 "XP" VERSION COUNTERS, INTRINSICALLY SAFE FACTORY MUTUAL APPROVED FOR USE IN HAZARDOUS LOCATIONS (I.E. EXPLOSIVE ENVIRONMENTS)



The CUB1XP and CUB2XP are specifically designed to provide intrinsically safe characteristics for use in hazardous locations. The units incorporate an internal debounce circuit for operation with count-switch contact input at speeds up to 50 Hz, and can be field connected for front panel or remote reset.

These counters use a custom designed LSI counter circuit chip, mounted on a gold-plated substrate and electrically connected by ultrasonic wire-bonding. Internal electrical interface connections use elastomeric contacts to provide a gas-tight, corrosion resistant connection. Using the latest in Micro-Electronic assembly and manufacturing techniques provides these units with the reliability and dependability required for industrial service.

* **RATED FOR HAZARDOUS LOCATIONS:**
 Class I, II, & III, Div. 1, Groups A, B, C, D, E, F, & G

OTHER FEATURES INCLUDE:

- **6-DIGIT LCD DISPLAY**
 0.2" (5.1 mm) on CUB1XP, 0.35" (8.9 mm) on CUB2XP
- **COUNT SPEEDS TO 50 Hz (3000 Counts/Min)**
- **BATTERY OPERATED**
 Requires NO External Power
- **FIELD CONNECTABLE FOR FRONT PANEL RESET, REMOTE RESET, OR BOTH**
- **RUGGED, SEALED FRONT PANEL CONSTRUCTION**

* See Specifications Below For Approval Restrictions

SPECIFICATIONS

POWER SOURCE: 2, "N" size, 1.5 V Alkaline cells.

Hazardous rating applies only when the following approved cells are installed:

- DURACELL #MN9100
- PANASONIC #AM5

Substitution of any other cells voids approval for use in hazardous locations

NOMINAL BATTERY LIFE: Nominal battery life 4 years. (Count and Reset Contacts which remain closed for long periods of time will reduce battery life.)

COUNT INPUT: Switch Count Input, 14 μ A contact burden. Max. OFF state leakage current 2 μ A. (See Note at right)

REMOTE RESET: Switch Contact, same ratings as Count Input.

ENVIRONMENTAL CONDITIONS:

Operating Temperature Range: 0° to 50°C

Vibration According to IEC 68-2-6: 5 to 500 Hz, in X, Y, Z direction for 1.5 hours, 5 g's.

Shock According to IEC 68-2-27: Operational 30 g, 11 msec in 3 directions.

COUNT SPEED: 50 Hz max. from switch contact with a 50% duty cycle.

WEIGHT (Less Batteries):

CUB1XP - 4.45 oz (126 g)

CUB2XP - 5.77 oz (164 g)

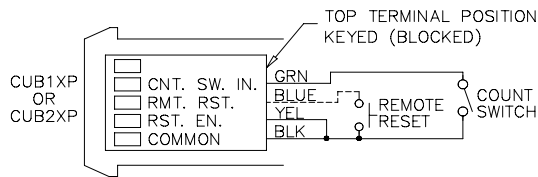
Note: Approval for operation in Hazardous Locations applies only for use with isolated Switch Contact Input to COUNT and REMOTE RESET INPUTS. Approval and Rating is voided if electronic sensors, VCM's, or other active elements are used. Hazardous location rating also limits usage to approved batteries (See Power Source Specifications).
 Connect only to simple apparatus as defined in ANSI/NFPA 70 Article 504

INPUT CONNECTIONS

Connections to the "XP" Version CUB Counters are made via a removable connector with 10 inch, 22-gauge terminal leads. Connections are made by twisting the leads to incoming wiring with the wire nuts included in the hardware pack.

Note: The removable connector with its terminal leads is a special assembly for use only with "XP" versions of CUB 1 and CUB 2. It cannot be interchanged with the connector assembly used on standard CUB Counters.

The count input signal is generated by the Count Switch that pulls the "CNT. SW. IN." (green lead) low to "Common" (black) to increment the counter. Connecting the "RESET ENABLE" (yellow) to common, activates the front panel button allowing it to be used to reset the counter. If front panel reset is not desired, remove the yellow wire from the connector. If remote reset is required, the blue wire included in the hardware pack can be inserted in the (REM RST)



location of the connector, and connected to Remote Reset Contacts. The counter can be connected for both front panel and remote reset.

Reed Switches, mercury-wetted contacts, snap-action limit switches, and silver-alloy contacts with wiping actions are usually ideal for count and reset inputs. Tungsten, heavy "clapper-type", or brush-type contacts should not be used.

MECHANICAL SPECIFICATIONS & INSTALLATION (See Cub 1 & 2)

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBERS
CUB1XP	CUB1 Cntr, Approved for Hazardous Location	CUB1XP00
CUB2XP	CUB2 Cntr, Approved for Hazardous Location	CUB2XP00
BNA	Approved "N" Type Alkaline Cells (See Note 1)	BNA00000
ICAXP	Spare Input Connector & Terminal Wire Kit (See Note 2)	ICAXP000

For more information on Pricing, Enclosures & Panel Mount Kits refer to the RLC Catalog or contact your local RLC distributor.

NOTES

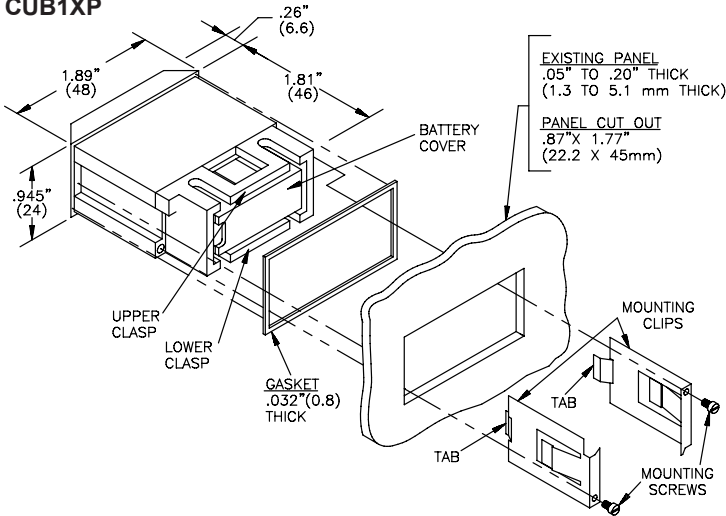
1. Batteries NOT supplied with counters
 Order separately (two per counter).
2. Counters supplied with connector and green, yellow, black and blue terminal wires. Spare Kit contains same.
3. Counters supplied with complete mounting hardware.

DIMENSIONS & INSTALLATION FOR CUB 1 & CUB 2, "XP" VERSIONS

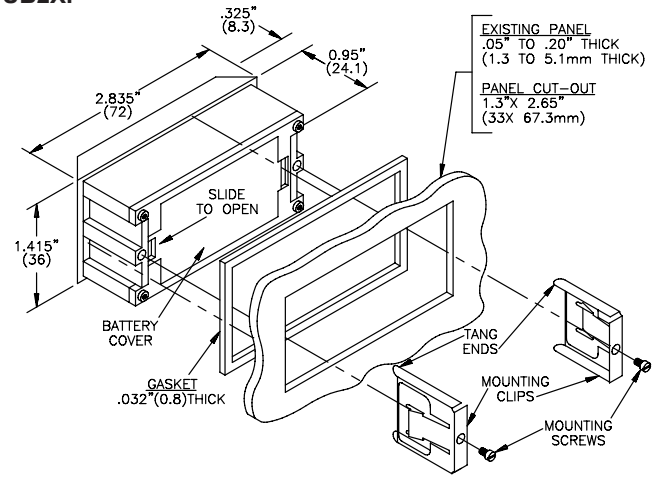
Counters should be mounted in a panel grounded to the machine frame. After cutting opening in panel, slide the panel gasket over the rear of the counter body to the back of the bezel. Then slide counter through the panel cut-out. Install mounting clips on each side of the counter body with mounting screws. Make

sure the side rails or tabs of the clips fit into the recesses in the side of the counter body so that the "Tang Ends" or "Tabs" wedge between the panel opening and body as the screws are tightened.

CUB1XP



CUB2XP



DIMENSIONS "In inches (mm)"

BATTERY COVER REMOVAL & BATTERY INSERTION

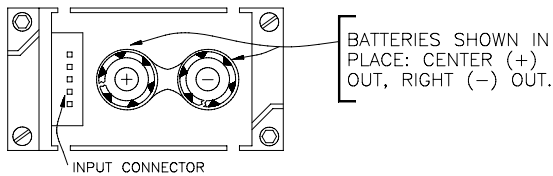
WARNING: INSTALL ONLY APPROVED BATTERIES. USING OTHER BATTERIES WILL VOID APPROVAL FOR USE IN HAZARDOUS LOCATIONS. (See Specifications).

CUB1XP

The battery cover is held in place by upper and lower clasps that capture mating lock ramps on the cover. To remove, insert thumbnail and index finger nail in the gaps between the upper and lower clasps and the battery cover, and deflect the clasps slightly to clear the edges of the ramps while pulling out on the cover. To replace cover, simply push into place until both clasps snap into engagement with lock ramps.

CAUTION: Do not deflect clasps more than necessary to clear lock ramps.

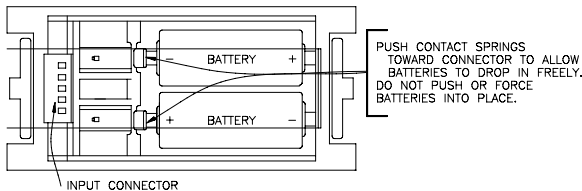
Excessive deflection can cause clasps to break off.



CUB2XP

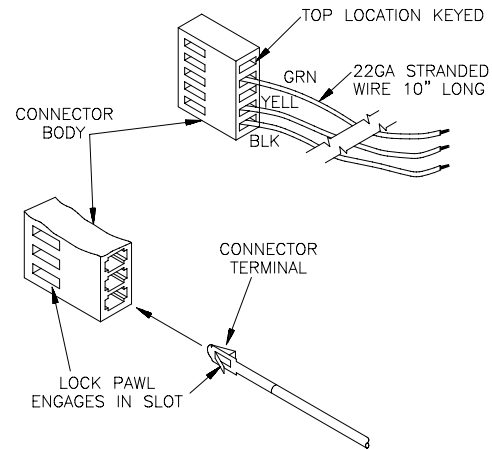
Slide battery cover to the left until the right hand lip disengages and pops out. To reinstall cover, insert left hand lips into case first, push cover to the left until right hand lip drops down and cover snaps back into place. Install batteries as shown below observing proper polarity.

Note: Push battery spring clips to the left (toward connector) to completely free the batteries when removing or installing batteries. Conductive rubber battery contacts can be torn from their retaining pins if batteries are forced in.



REMOVING & INSERTING CONNECTOR LEADS

Connector and lead assemblies are shipped with counters with leads installed as shown. Connector body is held in place by the battery cover which must be removed to disengage connector.



Removing Terminal: Insert blade of a small screwdriver into slot of connector body, and gently push in to disengage the lock pawl. Pull terminal out.

Inserting Terminal: When inserting into connector body, make sure the lock pawl is toward the slot in the body. Push terminal in until the lock pawl snaps into slot.

REMOVING & INSERTING CONNECTOR LEADS

Wiring runs to count-switches or to remote reset contacts can be made with almost any kind of wire and over distances of hundreds of feet, due to the advantages of low-voltage low-current operation. The inherent noise immunity and heavy filtering built into CUB Counters, permits use of unshielded wiring, however the following precautions are advisable especially in high electrical-noise environments.

1. Avoid long wire runs in cable troughs or conduits with power circuits.
2. Mount the CUB in a panel that is grounded to the machine frame.