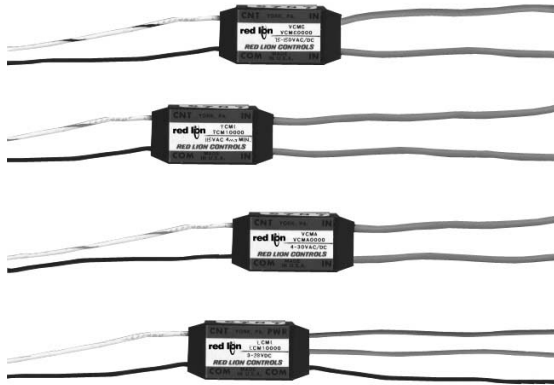


CONVERTER MODULES ADAPTS MANY RED LION CONTROLS' COUNTERS AND ACCESSORIES TO A WIDE RANGE OF SIGNAL SOURCES



VCM - VOLTAGE CONVERTER MODULES

Converts AC/DC voltages to acceptable signal inputs for many RLC counters and accessories, provides input/output isolation.

TCM - TRIAC CONVERTER MODULE

Accepts unloaded, high off-state leakage triac output from sensors and programmable controllers.

LCM - LOGIC CONVERTER MODULE

For interface with CMOS, TTL, and other logic circuits to +28 VDC, at speeds to 5000 cps. Allows Cub Counters to share sensor outputs with other series counters.

These miniature sized modules are completely encapsulated in PVC, which provides protection against oil, water, dirt, and mechanical damage. They can be quickly and easily mounted to the back of counter enclosures or to any nearby panel surface by a self-stick adhesive pad.

VCM - VOLTAGE CONVERTER MODULES

VCM's are provided in 2 series, VCM [A-D] and VCM [E-H], to increase the application flexibility of many RLC Counters and Accessories.

VCM [A-D]

These modules provide a convenient way to adapt CUB Counters* to most any machine control voltage signal. They also make it easy to upgrade electro-mechanical counter installations with CUB Counters.

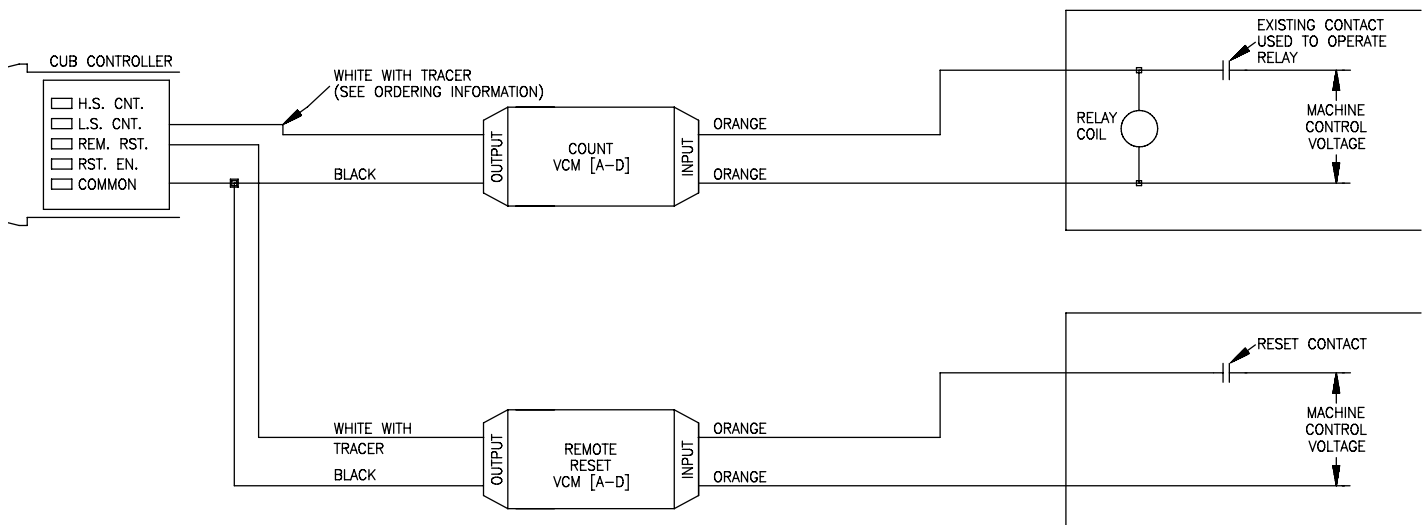
They are available in four overlapping input voltage ranges that cover the spectrum from 4-270 V (See VCM [A-D] Ordering Information for specific input voltage ranges). The non-polarized input of these modules will accept A.C. (50/60 Hz) or D.C. control voltages and at count speeds up to 30 cps. The output is an NPN Open-Collector Transistor compatible with either the L.S. Count or Remote Reset inputs of Cub Counters. Electrical isolation between input and output is achieved by means of an internal opto-isolator.

* VCM [A-D] intended for use with Cub 1, 2, 4, and 7 Counters and Cub 5 with DC Voltage.

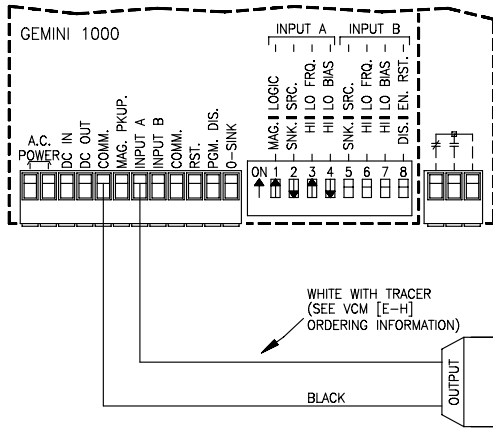
VCM [E-H]

These modules open up new application possibilities by adapting the Count Inputs of Gemini, Libra, Apollo, Lynx, Legends, PAXC, PAXI, CUBC, SC Series Counters, RMX - Rate Multiplier and the ACS Anti-Coincidence Summer to machine control voltage signals. The non-polarized input of these modules accept the four most widely used AC/DC voltage ranges and at count speeds up to 30 cps (See VCM [E-H] Ordering Information for specific input voltage ranges). Electrical isolation between the input and the NPN Open-Collector Transistor output is achieved by means of a UL listed opto-isolator rated at 1500 V Peak continuous.

ELECTRICAL CONNECTIONS FOR VCM [A-D] & TCM (Shown with optional VCM for Control Voltage Remote Reset)



ELECTRICAL CONNECTIONS FOR VCM [E-H]



| RLC UNITS | VCM [E-H] COUNT INPUT SWITCH SET-UP POSITIONS |
|------------------------------|---|
| SC SERIES COUNTERS RMX & ACS | S1 = OFF (SNK) S2 = ON (LO FRQ) S3 = OFF (HI BIAS) |
| GEMINI | S1 = ON (LOGIC) S2 = OFF (SNK) S3 = ON (LO FRQ) S4 = OFF (HI BIAS) |

CHANNEL "A" SHOWN

TCM - TRIAC CONVERTER MODULE

The TCM* is a specialized version of the VCM [A-D]. It is specifically designed to operate with photo-electric sensors and programmable controllers that have 115 VAC Triac outputs. Due to protective suppression circuits connected in parallel with Triacs, these outputs have a high OFF-State Leakage current, which, if unloaded, is sufficient to keep a VCM in the ON condition continuously.

The TCM incorporates a current bias that offsets output leakage currents of up to 4 mA and allows the application of CUB Counters to most unloaded Triac outputs. These modules are available for operation with 115 VAC $\pm 10\%$

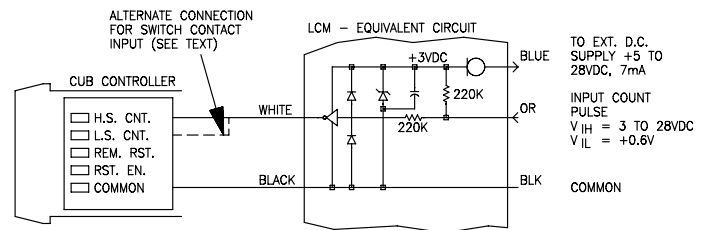
50/60 Hz only. They operate at count rates up to 10 cps, and also provide input/output electrical isolation. Connections for the TCM are the same as those for the VCM [A-D].

Note: VCM's can be used with Triac outputs that are also driving substantial loads, since the load will shunt the leakage current away from the VCM input.

* TCM intended for use with Cub 1, 2, 4, and 7 Counters and Cub 5 with DC Voltage.

LCM - CONVERTER MODULE

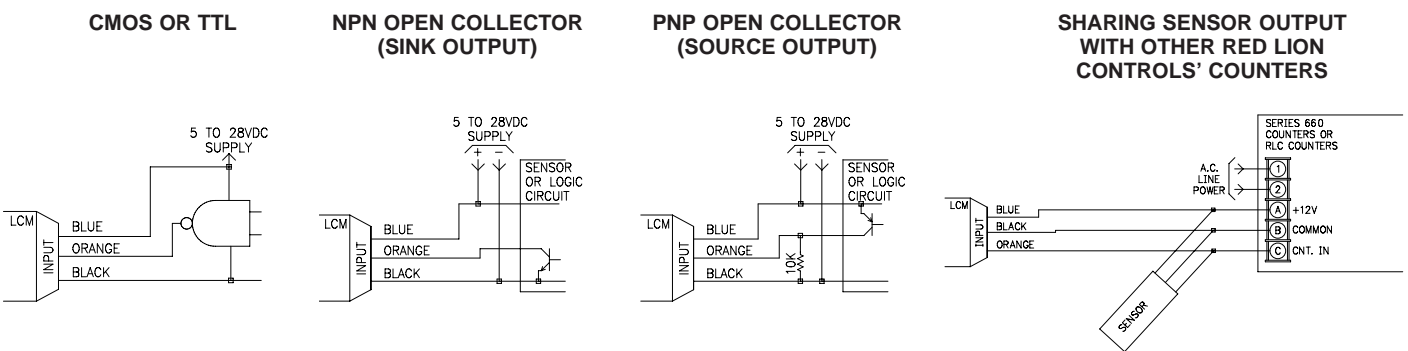
The LCM adapts CUB Counters to practically any type of logic and sensor output, and to any count signal voltage from +3 to +28 VDC. The module accepts input count pulses from NPN Open-Collector Transistor outputs, Bi-Polar outputs, or sourcing outputs such as Emitter-Follower or PNP Open-Collector Transistors (*Sourcing outputs must be externally loaded with a load of 10 Kohms or less*). The LCM output is a Bi-Polar drive that is compatible with either the Low-Speed or High-Speed Counter inputs as well as the Remote Reset input* of the CUB Counters. The output is inverted with respect to the input which causes the CUB Counter to increment on the leading (*positive going*) edge of a count pulse similar to other Red Lion Controls' counter series. Power for operation of the LCM can be normally obtained from the existing D.C. power supply used to operate the sensor or other logic circuitry. The LCM will operate from any D.C. power source ranging from +5 to +28 VDC, and draws a maximum of 7 mA. No filtering or de-bounce circuits are included in the LCM itself, since these are already provided within the CUB Counters. When the LCM output is applied to the H.S. input of CUB Counters, count rates to 5000 cps can be accommodated (*100 μ sec minimum pulse width*).** When count pulse signals are generated by switch contacts the LCM output can be applied to the L.S. input of the CUB to de-bounce these pulses. Minimum pulse width when driving the L.S. input is 10 msec and maximum count rate is 50 cps.



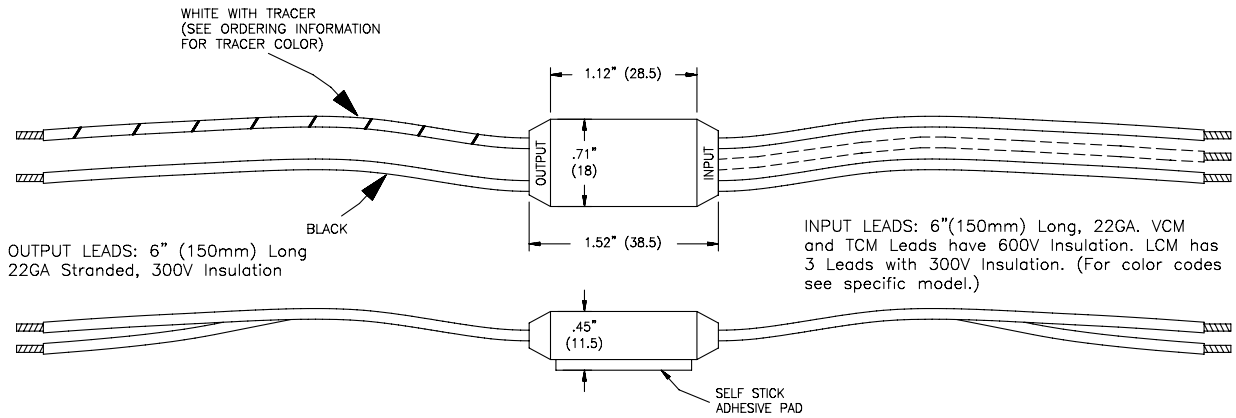
* When used to operate Remote Reset input, the LCM will reset counter when input to LCM goes high due to signal inversion.

** Some Red Lion Controls' sensors and accessories deliver a 50 μ sec output pulse that will not be accepted by CUB Counters. (The PSMA Power Supply and Interface Module has a 50 to 100 μ sec pulse stretcher circuit which can be used. See data sheet on PSMA).

TYPICAL INPUTS TO LCM



DIMENSIONS FOR VCM, TCM, & LCM In inches (mm)



ORDERING INFORMATION

VCM [A-D] Intended For Use With Cub Counters**

| MODEL NO. | DESCRIPTION | INPUT VOLTAGE | INPUT CURRENT | TRACER COLOR | PART NUMBER |
|------------|--------------------------|--|--|------------------|-------------|
| *VCM [A-D] | Voltage Converter Module | 4-30 V AC/DC | 1-15 mA | orange | VCMA0000 |
| | | 20-70 V AC/DC | 1.2-3.5 mA | yellow | VCMB0000 |
| | | 60-160 V AC/DC | 1.5-2.5 mA | none (all white) | VCMC0000 |
| | | 150-270 V AC/DC | 1.2-1.8 mA | red | VCMD0000 |
| *TCM | Triac Converter Module | 115 VAC ±10% | 9 mA | green | TCM10000 |
| *LCM | Logic Converter Module | +3 to +28 VDC (signal) +5 to +28 VDC (supply) | 115 µA max. (signal) 7 mA max. (supply) | none | LCM10000 |

* For use with CUB 1, 2, 4, and 7 counters and also Cub 3 and Cub 5 with DC Voltage.
** VCM's are not recommended for use with rate indicators.

VCM [E-H] Intended For Use With Gemini, Libra, Apollo, Lynx, SC Series, Legend, C48C, C48T, PAXC, PAXI and CUBC Counters, & Also RMX & ACS**

| MODEL NO. | DESCRIPTION | INPUT VOLTAGE | INPUT CURRENT | TRACER COLOR | PART NUMBER |
|-----------|--------------------------|-----------------|---------------|--------------|-------------|
| VCM [E-H] | Voltage Converter Module | 4-16 V AC/DC | 1.3-12 mA | blue | VCME0000 |
| | | 20-55 V AC/DC | 2.4-8.4 mA | violet | VCMF0000 |
| | | 75-150 V AC/DC | 1.6-3.7 mA | black | VCMG0000 |
| | | 160-260 V AC/DC | 1.6-3.0 mA | brown | VCMH0000 |

** VCM's are not recommended for use with rate indicators.

LIMITED WARRANTY

The Company warrants the products it manufactures against defects in materials and workmanship for a period limited to one year from the date of shipment, provided the products have been stored, handled, installed, and used under proper conditions. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.

The customer agrees to hold Red Lion Controls harmless from, defend, and indemnify RLC against damages, claims, and expenses arising out of subsequent sales of RLC products or products containing components manufactured by RLC and based upon personal injuries, deaths, property damage, lost profits, and other matters which Buyer, its employees, or sub-contractors are or may be to any extent liable, including without limitation penalties imposed by the Consumer Product Safety Act (P.L. 92-573) and liability imposed upon any person pursuant to the Magnuson-Moss Warranty Act (P.L. 93-637), as now in effect or as amended hereafter.

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