CB4 Series

INCANDESCENT CONTROLS

and

REMOTE HEADS

For those unique applications
where LED light will not work
CB1 Series Remotely Operated All-Purpose Controls

- Plug-in Circuitry
- 5.8, 4.7, 3.3, 2.5, 2.2 and 1.1 volts produced for remote incandescent light source.
- CB1 Series includes NEMA 1, dust tight, steel case. NEMA 12 available upon request.
- CA1 Series comes without enclosure — ideal for panel mounting.
- Two output options available — plug in DPDT relay or plug-in logic.
- Rugged terminal blocks provided with break resistant barriers and back barrier for added safety and wiring ease.
- Heavy-duty screw terminals supplied in "raised" position ready to fasten on to wire. Large 8-32 screws for high voltage connections.
- All plug-in circuit boards contain red LED alignment indicator which glows when beam is properly aligned.
- Non-conducting hold-downs provided to secure plug-in circuit board into position.
- Offers a modular design for maximum flexibility and maintenance ease. Plug-in circuit board contains all electronic components.
  a. Gold plating on board contacts and edge connector.
  b. Rugged G-10 glass epoxy board.
- Plug-in circuit cards are protected by steel housing on 8 sides, yet all adjustments are easily accessible along card edge.

OTHER FEATURES
- Can be used with a wide selection of remote sensors and light sources.
- Is compatible with phototransistor, cad cell or contact inputs.
- All transistors and IC's hermetically sealed for maximum performance and reliability.
- Many different functions supplied on plug-in circuit boards.
- Rugged solid state design.
- Voltage regulation of time delay circuits provides accuracy of timing within 1% over input voltage of 100 to 130 volts.

ORDERING INFORMATION
The CB1 Series model numbers are made up of three parts:
Base — Function — Output
Choose among the following options:
Base
  CB1 — standard base in NEMA 1 enclosure
  CA1 — CB1 less enclosure — chassis only
Function
Choose desired plug-in circuit function from page 3.
Output
  R — standard plug-in DPDT relay
  L — plug-in logic; both opto-isolated transistor switch and low-level voltage output
  LB — plug-in logic; open-collector transistor switch
Example of Complete Model:
  voltCB1 - F101 - R
Order remote heads separately.

SPECIFICATIONS
Input
  115 or 230 V  50-60 Hz
Power Consumption
  25 VA maximum
Output
  Relay Response:
    .03 sec. min. LIGHT time
    .03 sec. min. DARK time
Maximum Ambient Operating Temperature
  -40° F to +130° F (-40° C to +55° C)
Enclosure
  Steel case, epoxy painted.
  NEMA 1 (dust tight) is standard on CB1 Series — NEMA 12 available upon request.
  Holes available for mounting to wall.
Shipping Weight
  10 lbs.
## Plug-in Circuit Information

<table>
<thead>
<tr>
<th>Function No.</th>
<th>Operation</th>
<th>Sensitivity Adjustment</th>
<th>Output Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>F101</td>
<td>ON/OFF—Light energized</td>
<td>Yes</td>
<td>1L</td>
</tr>
<tr>
<td>F1101</td>
<td>ON/OFF—Light energized—High sensitivity</td>
<td>Yes</td>
<td>1L</td>
</tr>
<tr>
<td>T110</td>
<td>Light energized, times out Light OR Dark energized, times out Dark</td>
<td>Yes</td>
<td>2L, 3D</td>
</tr>
<tr>
<td>T120</td>
<td>Capacity-coupled—&quot;One Shot&quot;</td>
<td>Yes</td>
<td>5D, 6L</td>
</tr>
<tr>
<td>T130</td>
<td>Dual Timer—times out Light AND times out Dark—Light energized</td>
<td>Yes</td>
<td>4L</td>
</tr>
<tr>
<td>T160</td>
<td>Light energized times out Dark OR Dark energized, times out Light</td>
<td>Yes</td>
<td>2D, 3L</td>
</tr>
<tr>
<td>T1110</td>
<td>Same as T110—High sensitivity</td>
<td>Yes</td>
<td>2L, 3D</td>
</tr>
<tr>
<td>T1120</td>
<td>Same as T120—High sensitivity</td>
<td>Yes</td>
<td>5D, 6L</td>
</tr>
<tr>
<td>T1130</td>
<td>Same as T130—High sensitivity</td>
<td>Yes</td>
<td>4L</td>
</tr>
<tr>
<td>T1160</td>
<td>Same as T160—High sensitivity</td>
<td>Yes</td>
<td>2D, 3L</td>
</tr>
<tr>
<td>T2160</td>
<td>Same as T160—Fast response, .0005 second maximum</td>
<td>Yes</td>
<td>2D, 3L</td>
</tr>
<tr>
<td>T142</td>
<td>Two digit predetermined counter—light OR Dark energized</td>
<td>Yes</td>
<td>7L, 7D</td>
</tr>
<tr>
<td>T144</td>
<td>Same as T142—Four digit (see inset)</td>
<td>Yes</td>
<td>7L, 7D</td>
</tr>
</tbody>
</table>

### TIME RANGES

- Timing Ranges are specified in the last digit of the function number. The standard range is shown in the above numbers.

Range No. 0: .1-10 seconds (standard)

2: .005-5
3: .01-1
5: .02-2.5
6: .04-5
7: .2-23
8: .9-90 (additional charge)

Others available upon request

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**T144 Predetermined Counter**

Counts up to 1500 per SECOND. For Batch counting or N-to-1 counter.
Output Sequences

INPUT
Light
Dark

OUTPUTS

1L
Energize
De-energize

1D
Energize
De-energize

2L
Energize
De-energize

2D
Energize
De-energize

3L
Energize
De-energize

3D
Energize
De-energize

4L
Energize
De-energize

4D
Energize
De-energize

5L
Energize
De-energize

5D
Energize
De-energize

6L
Energize
De-energize

6D
Energize
De-energize

7
Energize
De-energize

Applications

General purpose, limit switch, counting, intrusion, edge control, die protection, positioning, level detector

"no product" alarm, pulse stretcher

"jam up" alarm, pulse stretcher, sheet stacker control

Jam up or no product alarm where delay is required before restarting

Cut-to-length switch, pulse stretching or shortening, stop motion control

Batch counting N-to-1 counter
Compact Remote Sensing and Light Source Heads

GENERAL FEATURES

- 6' factory connected cable on all heads (except 2' leads on E8Z Series).
- Solderless lugs provided for connection to control.
- Maximum ambient operating temperatures:
  - 115° F (46° C) for cad cells
  - 175° F (79° C) for phototransistors

E8B SERIES

- Adjustable mounting bracket.
- Plug-in, replaceable lamp and sensor.
- Optional potted cable connection with ¾" NPT fitting.
- Maximum range:
  - 20' high sensitivity cad cell and phototransistor
  - 8' moderate sensitivity cad cell

SENSING HEADS

E8BP10LC has high sensitivity cad cell.
E8BP10C has moderate sensitivity cad cell.
E8BP58BC has phototransistor.
E8BP10LC is E8BP10CLC with extra ambient light protection.
E8BP10C is E8BP10C with extra ambient light protection.
E8BP58BC is E8BP58BC with extra ambient light protection.

LIGHT SOURCE HEAD

E8BC has ±10 lamp; .5 A at 2.5 V, 2500 hrs. average life.

E8B SERIES FIXED FOCUS BEAMS

- Used when maximum light required through small opening.
- Allows more accurate positioning of edge of object.

SENSING HEADS

E8BC-4
E8BC-6
Other Models

E8BC-1
ECC-1
1/8" focal length
1/16" x 5/16" focal size
1/4" focal length
1/16" x 5/16" focal size
1/2 focal length
1/32" x 1/8" focal size
1/8 focal length
1/32" x 1/8" focal size

For most effective use of focused light beams:
A. Object should interrupt beam at focal point.
B. Distance between object and sensor lens should not be greater than the focal length.

E8A SERIES

- Same features as E8B Series but with shorter lens barrel for mounting in smaller spaces.
- Maximum range:
  - 10' high sensitivity cad cell
  - 7' moderate sensitivity cad cell and phototransistor

SENSING HEADS

E8AP10LC has high sensitivity cad cell.
E8AP10C has moderate sensitivity cad cell.
E8AP58BC has phototransistor.

LIGHT SOURCE HEAD

E8AC has ±10 lamp; .5 A at 2.5 V, 2500 hrs. average life.

E8A SERIES

- Same features as E8B Series but with smaller lens barrel than E8BA Series.
- Maximum range:
  - 2' high sensitivity cad cell
  - 1' moderate sensitivity cad cell and phototransistor

SENSING HEADS

E8AP10LC has high sensitivity cad cell.
E8AP10C has moderate sensitivity cad cell.
E8AP58BC has phototransistor.

LIGHT SOURCE HEADS

E8A10C has ±10 lamp; .5 A at 2.5 V, 2500 hrs. average life.

E8Z SERIES

- UL Listed, for use in hazardous locations.
- Underwriters Laboratory Listing: Class 1, Groups C and D; Class II, Groups E, F and G.
- EBZ10 rated 1.25 W.
- EBZ10L rated 0.125 VA maximum, 40 V DC maximum.
- EBZ10 rated 0.250 VA maximum, 10 V DC maximum.
- Plug-in replaceable lamp and sensor.
- Potted lead connection.
- Maximum range:
  - 20' high sensitivity cad cell and phototransistor
  - 8' moderate sensitivity cad cell

SENSING HEADS

E8ZP10L has high sensitivity cad cell.
E8ZP10 has moderate sensitivity cad cell.
E8ZP58B has phototransistor.

LIGHT SOURCE HEADS

E8Z10 has ±10 lamp; .5 A at 2.5 V, 2500 hrs. average life.
E8Z12 has ±12 lamp; .15 A at 5.8 V, 5000 hrs. average life.
Miniature Remote Sensing and Light Source Heads

EC SERIES
- Adjustable mounting bracket
- Plug-in replaceable lamp and sensor
- Potted cable connection with 1/4" NPT fitting
- Maximum range:
  2' high sensitivity cad cell
  1' moderate sensitivity cad cell and phototransistor

SENSING HEADS
ECP10C has high sensitivity cad cell
ECP10C has moderate sensitivity cad cell
ECP58C has phototransistor

LIGHT SOURCE HEAD
ECC has #10 lamp; .5 A at 2.5 V, 2500 hrs. average life.

EAP/EL SERIES
- Sub-miniature assembly for very tight spaces.
- Lamp, sensor and cable potted for protection against environmental conditions and mechanical injury.
- EAP12G and EAP58G have plug-in, replaceable sensor. In case of lamp failure, entire head is replaced.
- EAP/EL Series is end-view. EAP5 Series is side-view.
- Maximum range: EAP/EL 3'

SENSING HEADS
EAP12G has cad cell
EAP58G has phototransistor
EAP12G has cad cell
EAP32 has phototransistor

LIGHT SOURCE HEADS
ELG has #253 lamp; 25 A at 12 V, 7500 hrs. average life.
Series resistor available for longer lamp life when feasible.

Long Range Remote Sensing and Light Source Heads

E1A SERIES
- E1A Series cases tapped for 1/4" pipe and may be rigidly positioned on pipe or conduit with lock nut.
- Lamp and cell easily replaceable without disturbing mounting.
- Cases are gasket-sealed, die cast zinc, splashproof.
- Shipping weight 1 lb.
- High intensity lamp provides long range capability.
- Maximum range:
  35' high sensitivity cad cell and phototransistor
  10' moderate sensitivity cad cell

SENSING HEADS
E1AP10LC has high sensitivity cad cell
E1AP10C has moderate sensitivity cad cell
E1AP58C has phototransistor

LIGHT SOURCE HEAD
E1AE has #88L lamp; 1.8 A at 5.8 V, 10,000 hrs. average life at 4.8 V.
Specular-Reflective Scanner Heads

E8LP SERIES

- Detects mirror-like surfaces. Light beam must be directed perpendicular to the reflective surface for light to bounce back and strike the light sensing cell.
- Developed for high-speed scanning in limited space.
- Compact heads contain both lamp and sensor.
- Lamp #1746, rated 4 A at 2.5 V, 6000 hrs. average life.
- Operating lamps at lower-than-rated voltage greatly prolong lamp life.
- Lamp has built-in lens.
- Filter in front of cell protects against interference from ambient light.
- Lamp and sensor replaceable.
- Both cad cells and high-speed phototransistors available.
- Potted cable connection with 3/8" NPT fitting and adjustable mounting bracket.
- Maximum range off mirror using higher sensitivity controls 6'.

MODELS

E8LP12G has cad cell
E8LP5BG has phototransistor