IMPORTANT!!!

PLEASE TAKE THE TIME TO FILL OUT THIS FORM COMPLETELY. FILE IT IN A SAFE PLACE. IN THE EVENT YOU EXPERIENCE PROBLEMS WITH OR HAVE QUESTIONS CONCERNING YOUR CONTROLLER, THE FOLLOWING INFORMATION IS NECESSARY TO OBTAIN PROPER SERVICE AND PARTS.

MODEL # ___________ AA1MGPS ___________

SERIAL # ____________________________

PURCHASE DATE ____________________________

PURCHASED FROM ____________________________
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WARRANTY & RETURN POLICY

RETURN MERCHANDISE AUTHORIZATION (RMA) FORM
APPENDIX

CHASSIS COMPONENT LAYOUT .......................................................... 1210-R
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PHOTOCCELL HOUSING DETAIL ....................................................... 100239
TOWER LIGHTING KIT 151’ TO 350’ .................................................. T1210
LED BEACON MOUNTING, WIRING DETAIL AND LED OL DETAIL ....... 100674
(LED BEACON ASSEMBLY)
1.0 GENERAL INFORMATION

The TWR Model AA1MGPS Controller is for wind turbine towers. One (1) LED beacon should be placed at the top.

The flash rate of the LED beacon is 30 per minute.

A by-pass switch (SW1) allows the controller to be turned on during daylight hours without covering the photocell. This is particularly helpful since the controller can be mounted indoors while the photocell is outdoors. SW1 can be operated by flipping the switch up to “On” position.

The photocell is the three (3) blade, twist to lock, type.

Power supplied to the controller shall be 120V AC single phase.

The controller housing is rated at NEMA 4X. It is suitable for indoor or outdoor mounting.

Controller functions that are monitored by remote alarms in the form of dry contact closures (Form C) are as follows:

**POWER FAILURE**
Monitors 120V AC to the controller. Alarms in the event of power failure or tripped circuit breaker.

**LIGHTS “ON”**
Gives an indication whenever the controller is activated.

**LED BEACON**
Will give an alarm in the event the LED beacon fails, along with visual indicator for that circuit.

**FLASHER FAILURE**
Will give an alarm in the event of failure of flasher.
2.0 INSTALLATION INSTRUCTIONS

2.1 MOUNTING THE CONTROL CABINET
(Refer to Drawing 1210-R)

The power supply control cabinet can be located at the base of the structure or in an equipment building. Mounting footprints are shown on Drawing 1210-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

2.1.1 If the control cabinet is mounted inside an equipment building, the photocell should be mounted vertically on junction box “JBO” outside the building above the eaves facing north. Wiring from the photocell socket to the control cabinet should consist of one (1) each, red, black, and white wires. The white wire is connected to the socket terminal marked “N,” the black wire is connected to the socket terminal marked “L,” and the red wire is connected to the socket terminal marked “LO.” Care must be taken to assure that the photocell does not “see” any ambient light that would prevent it from switching into the nightmode.

2.1.2 The GPS receiver and photocell shall be mounted on junction box “JBO” next to photocell. Its cable shall be connected to the adapt board “J3.” Mounting footprints are shown on drawing T1210.

2.1.3 The wiring from the photocell, the service breaker, and the red incandescent beacons, should enter the control cabinet through the watertight connectors in the bottom of the cabinet. Inside the cabinet, the connections will be made on the terminal strips and circuit breakers located at the bottom of the chassis. These connections are made as follows:

2.2 EXTERNAL PHOTOCELL WIRING
(Refer to Drawing 1210-R)

2.2.1 Connect the BLACK wire from the photocell to terminal block TB2 marked “L.”
2.2.2 Connect the RED wire from the photocell to terminal block TB2 marked “SSR.”

2.2.3 Connect the WHITE wire from the photocell to terminal block TB2 marked “N.”

2.3 POWER WIRING
(Refer to Drawing 1210-R)

2.3.1 Power wiring to the control cabinet should be in accordance with local methods and NEC.

2.3.2 Circuit breaker needs to be rated at 20 amps.

2.3.3 Connect incoming 120V AC “Hot” to terminal block TB1 marked “L.”

2.3.4 Connect the neutral wire(s) to one (1) of the terminal blocks on TB1 marked “N.”

2.3.5 Connect the AC ground to the grounding lug on the aluminum mounting plate.

2.4 LED BEACON AND LED WIRING
(Refer to Drawings 1210-R and T1210)

2.4.1 Connect the BLACK wire from the LED Beacon to the circuit breaker marked “B.”

2.4.2 Connect the WHITE neutral wire(s) to one (1) or more of the terminals marked “N.”

2.4.3 Connect the GREEN wire to the chassis ground.

2.5 LED BEACON ALARM WIRING
(Refer to Drawings 1210-R and 1210-S)

2.5.1 Alarm relays K1-K3, and alarm Module M1 are provided for independent contact closures for: Power Failure, Lights “On,” Flasher Failure and LED Beacon Burnout.
2.5.2 Alarm Wiring: To utilize all of the red light alarms, the customer will need four (4) pair of wires to interface with his alarm device. One (1) wire from each of the four (4) pair will terminate at the points marking common (C). The remaining wire from each pair will terminate as follows:

**Power Failure Alarm:** Connect to relay K1, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.

**Lights “On” Alarm:** Connect to relay K2, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.

**Flasher Failure:** Connect to relay K3, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.

**“B” Burnout:** Connect to Module M1, terminals T4 and T6, for normally open (OR) terminals T4 and T5, for normally closed monitoring.

2.5.3 Alarm Testing: To test alarms, follow the procedures using an “ohm” meter between alarm common and alarm points.

**Power Failure:** Pull circuit breaker at electrical panel.

**Lights “On”:** Operate photocell by-pass switch SW1 or cover the photocell.

**LED Beacon:** Trip breakers on the controller panel.
3.0 THEORY OF OPERATION

3.1 POWER SUPPLY

120V AC enters the controller from the circuit breaker panel. Line “L” sits at the K4, waiting to be switched, and also keeps the power failure relay K1 energized. When the 102FAA photocell is activated, Line “SSR” energizes the coil of the K4 and K2 “Lights On” relay. This also can be accomplished by using the photocell by-pass switch (SW1).

3.2 LED BEACON

Line LDB is sent to Modules M1 and M2. M2 is the primary flasher for the LED beacon. It is then sent through the current sensing Module M1, then to the breaker output marked “B.” If Module M1 detects an LED beacon burnout, then that module would provide a contact closure along with a visual indication for that circuit.

Relay K3 is a flasher failure relay for the LED beacon. If Relay K3 detects a flasher failure, it would then provide a contact closure for the flasher circuit.
4.0 MAINTENANCE

4.1 L-864 LED BEACON REPLACEMENT

No scheduled maintenance is required. Perform on an “as needed” basis only.

4.2 L-864 CONTROLLER

No scheduled maintenance is required. Perform on an “as needed” basis only.

4.3 PHOTOCELL

The photocell is a sealed unit. No maintenance is needed or required other than replacement as necessary.
## 5.0 MAJOR COMPONENTS PARTS LIST

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102-FAA</td>
<td>Photocell</td>
</tr>
<tr>
<td>1</td>
<td>FA155-2</td>
<td>Solid State Flasher (M2)</td>
</tr>
<tr>
<td>1</td>
<td>B20J1K2</td>
<td>1,200 ohm 12 watt Resistor (R1)</td>
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<td>4</td>
<td>PB27E122</td>
<td>Octal Sockets</td>
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<tr>
<td>2</td>
<td>KRPA5AG120V</td>
<td>SPDT Relay (K1 &amp; K2)</td>
</tr>
<tr>
<td>1</td>
<td>SPEC 224</td>
<td>Time Delay Relay (K3)</td>
</tr>
<tr>
<td>1</td>
<td>STJ01002</td>
<td>Switch (SW1)</td>
</tr>
<tr>
<td>1</td>
<td>VJ1412HWPL2X004</td>
<td>Enclosure</td>
</tr>
<tr>
<td>6</td>
<td>8WA1204</td>
<td>Terminal Block (TB1 &amp; TB2)</td>
</tr>
<tr>
<td>2</td>
<td>8WA1808</td>
<td>Terminal Block End Stop</td>
</tr>
<tr>
<td>1</td>
<td>S261D1</td>
<td>1 amp BREAKER</td>
</tr>
<tr>
<td>1</td>
<td>S261D2</td>
<td>2 amp BREAKER</td>
</tr>
<tr>
<td>1</td>
<td>KRPA11AG120</td>
<td>DPDT RELAY (K4)</td>
</tr>
<tr>
<td>1</td>
<td>GPSSYNC-HK</td>
<td>CONTROL PCB</td>
</tr>
</tbody>
</table>
## AA1MGPS CONTROLLER

### 6.0 SUGGESTED SPARE PARTS LIST

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102-FAA</td>
<td>Photocell</td>
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<tr>
<td>1</td>
<td>FA155-2</td>
<td>Solid State Flasher (M2)</td>
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<tr>
<td>1</td>
<td>KRPA5AG120V</td>
<td>SPDT Relay (K1 &amp; K2)</td>
</tr>
<tr>
<td>1</td>
<td>SPEC 224</td>
<td>Time Delay Relay (K3)</td>
</tr>
<tr>
<td>1</td>
<td>SCR430T</td>
<td>CURRENT SENSOR</td>
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<tr>
<td>1</td>
<td>KRPA11AG120V</td>
<td>DPDT RELAY (K4)</td>
</tr>
<tr>
<td>1</td>
<td>GPSSYNC-HK</td>
<td>CONTROL PCB</td>
</tr>
</tbody>
</table>
NOTES:
1. WHEN REPLACING METAL BASE MODULES USE HEAT SINK COMPOUND BETWEEN MODULES AND ALUMINUM PLATE.
2. PLUG FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
3. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L TO L TO L.

**=CUSTOMER REMOTE ALARM POINTS FOR OBSTRUCTION LIGHTS
***=NOT USED

MOUNTING DIMENSIONS

FOR CABINET

10-7/8"x12-7/8" PANEL
ITEM | QTY. | DESCRIPTION
--- | --- | ---
1 | 1 | PHOTOCELL
2 | 2 | 6-32 x 1/2" SCREW
3 | 1 | RECEPTACLE SOCKET
4 | 1 | RECEPTACLE GASKET
5 | 1 | RECEPTACLE HOUSING
6 | 1 | 1/2" CONDUIT LOCKNUT
7 | 1 | 3/4" TO 1/2" REDUCER

NOTES:

1. ITEM #7 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.

2. IF ADDITIONAL WIRE IS REQUIRED OVER THE FACTORY 20', USE THE FOLLOWING CHART.
   - 21' TO 300' - 16 AWG TFFN
   - 301' TO 500' - 14 AWG TFFN
BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY</th>
<th>TWR PART NO.</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>HYDRAULIC</td>
<td>1/2&quot; STRAIGHT</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>CG1279</td>
<td>3/4&quot; CONE CONNECTOR 0.125</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>J20</td>
<td>3/4&quot; STRAIN RELIEF BOX</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>GRD100</td>
<td>6&quot; dia. PIPE NOZZLE</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>CLM490</td>
<td>3/4&quot; 90° ELBOW</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>K141760</td>
<td>3/4&quot; x 18&quot; NIPPLE</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>CBG14</td>
<td>3/4&quot; CONDUIT COUPLING</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>SGD3-1/2</td>
<td>1/2&quot; 2-WIRE CABLE</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>ATMLED-GPS</td>
<td>ATMLED-GPS CONTROLLER</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>VPI-200T</td>
<td>GPS RECEIVER</td>
</tr>
</tbody>
</table>

* = ITEMS NOT SHOWN
~ = ITEM QUANTITY CALCULATED ACCORDING TO ROUTING OR SEPARATION DISTANCE OF CONTROLLER AND LED BEACON.

NOTES:
1) PHOTOCELL PROVIDED WITH CONTROLLER.
2) THIS DRAWING IS PROVIDED AS A GENERAL REFERENCE. TWR LIGHTING, INC. DOCUMENTATION SUPERSEDES THIS DRAWING & SHOULD BE REVIEWED PRIOR TO INSTALLATION OF THIS SYSTEM.
**Parts List**

<table>
<thead>
<tr>
<th>ITE</th>
<th>QTY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>LEDLTENG</td>
<td>120 VAC L-864 LED LIGHT ENG</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>LEDFRMKIT</td>
<td>LEDBEA KIT / BASE, LID &amp; CAP</td>
</tr>
<tr>
<td>2.1</td>
<td>1</td>
<td>(100672-01)</td>
<td>LEDBEACON BASE PLATE</td>
</tr>
<tr>
<td>2.2</td>
<td>1</td>
<td>(100344)</td>
<td>CAP DUAL BEACON</td>
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<tr>
<td>2.3</td>
<td>1</td>
<td>(100673)</td>
<td>LEDBEACON LID PLATE</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>STLDBCTUBE</td>
<td>CLEAR ACRYLIC TUBE 14&quot;</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>STBEAGSK2</td>
<td>GASKET 3/16 X 15 1/4</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>1420X81316AT</td>
<td>14-20 X 8-13/16 5/5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>1420SSNUTN</td>
<td>1/4-20 5/5 NUT W/NYLON</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>1420NUT</td>
<td>1/4-20 5/5 NUT</td>
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<tr>
<td>8</td>
<td>1</td>
<td>EL1905</td>
<td>1&quot; 90 SHORT ELBOW GALV</td>
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<tr>
<td>9</td>
<td>1</td>
<td>A315</td>
<td>1&quot; CONDUIT LOCKNUT GALV</td>
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<tr>
<td>10</td>
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<td>CC-MPT-1-G</td>
<td>1&quot; CORD CONNECTOR</td>
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<td>PRODUCT LABEL</td>
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<td>10</td>
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<td>4</td>
<td>100606M</td>
<td>RETAINING WASHER</td>
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<td>6</td>
<td>18PRSS</td>
<td>1/8 X .45 SS POP RIVET</td>
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<td>15</td>
<td>4</td>
<td>58X112</td>
<td>A325 5/8 X 1-1/2 W/lnut</td>
</tr>
<tr>
<td>*16</td>
<td>3</td>
<td>* 14RB-2577</td>
<td>FEM DISC 16-14 GA</td>
</tr>
</tbody>
</table>

* = ITEMS NOT SHOWN

**Dimensions:**
- 15.45 in (392.54)
- .812" HOLES SPACED
- 90' ON 13.25" BOLT CIRCLE

**Weight:** 46 LBS. (20.9 KG)

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**TWR Lighting, Inc.**

Enlightened Technology

**Title:**

LEDBEACON ASSEMBLY

**Scale:** B

**Part No:** 100674

**Drawing Status:**
- DRAWN
- CHECKED
- APPROVED

**Revision:** B

**Date:**
- 2/8/2005
- 10/12/2005
- 10/12/2005
- 10/12/2005

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