MICROCOM - GES

UL SUBMISSION

(7) Instructions Wiring Diagram

GES, INC.

Installation Instructions for The MegaWattMizer(MWM) "Self Powered Bi-Level HID Lighting Kit"

For Indoor High-Low Bay Metal Halide and HPS Luminaires(150-400W)- Self-Cleaning Ventilated Reflector Design (Open at top of reflector)

Installation Instructions:

1) **Turn power off** to the luminaire to avoid the possibility of electrical Shock.

2) Remove lens cover or wire guard from reflector if applicable. It is not necessary to remove the reflector from the luminaire to install the HID Bi-level kit.

3) Carefully remove the lamp from the lamp holder socket. **Note: If the lamp is HOT** don't attempt to remove with bare hands. Use protective gloves.

4) Remove the existing lamp socket assembly by removing socket screws(2) located in the socket base. (A) Carefully remove the socket wires from the luminaire housing to expose wire connectors. (B) Remove the wire connectors. **Note:** If the luminaire is either a **HPS or Pulse Start Metal Halide** type, there should be an additional wire (lamp igniter wire) attached to the black wire on the lamp socket. After removing the socket wires ends from inside the luminaire housing, be certain that wire ends remain outside the housing to facilitate the installation of the new lamp socket assembly.

5) Install the new MWM porcelain lamp socket and cable assembly supplied. **IMPORTANT:** Use the MWM lamp socket and cable assembly included in the kit only. (A) Connect the MWM socket "brown" wire to the "black" or to the wire labeled "lamp" with the enclosed wire connectors. Note: If the luminaire has either a HPS or Pulse Start Metal Halide type ballast, connect the lamp ignitor wire to "brown" MWM socket wire also. B) Connect remaining "white" or wire labeled "com" to the "white" MWM socket wire. Be certain that wire connectors are secure before carefully pushing the wire connectors and wire on the new lamp socket back into the luminaire housing opening. (C) Attach the MWM lamp socket to the luminaire with the 8-32 screws supplied with the socket. Do not over tighten screws, as this may crack or break the porcelain socket. (D) Push the lamp socket cable through the ventilated opening between the luminaire housing and the top of reflector.

6) Re-install the lamp into the newly installed MWM lamp socket assembly. Turn lamp until snug. Do not over-tighten. If applicable, re-install clean lens cover or wireguard onto reflector.

7) Install the MWM Self-Powered Control Module onto the luminaire housing with one of the supplied mounting brackets by loosening the luminaire housing screws on one side of housing above the reflector. Slip the bracket over the head of the loosened screws and properly adjust Module and tighten screws. Make sure all the luminaire housing screws are snug.

8) Connect cable from the lamp socket to the MWM module by inserting quick connect end of socket cable into the corresponding quick connect on the self-powered control module. **Note:** If this MWM Bi-level Control Module is equipped with EnergyLink be sure that the selector switches have been properly set. For the selector switch set-up refer to the enclosed instructions.

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Installation Instructions for The MegaWattMizer(MWM) "Self Powered Bi-Level HID Lighting Kit"

(Cont'd) Installation Instructions for Ventilated "Open at Top" Reflector

9) Connect the external control device cable, ie; occupancy sensors, daylighting, time clocks, etc., to the three(3) conductor connector labeled "controls" on the front cover of the MWM Self Powered Bi-level Control Module. If module is equipped with EnergyLink "only the transmitting units" require an external control device. The receiving units do not require any additional control wiring to function properly. If the external control devices are equipped with their own power source do not connect the device to the lug labeled "+12VDC out" located on the front cover. Refer to the manufacturer's control device installation instructions for additional information.

10) Reconnect power to luminaire.

INSTALL1.MWM

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Installation Instructions for The MegaWattMizer(MWM) "Self Powered Bi-Level HID Lighting Kit"

For Indoor High-Low Bay Metal Halide and HPS Luminaires(150-400W)- Enclosed Reflector Design (Closed at top of reflector)

Installation Instructions:

1) **Turn power off** to the luminaire to avoid the possibility of electrical Shock.

2) Remove the lens cover or wire guard from the reflector if applicable. It is not necessary to remove the reflector from the luminaire to install the HID Bi-level kit.

3) Carefully remove the lamp from the lamp holder socket. **Note: If the lamp is HOT** don't attempt to remove with bare hands. Use protective gloves.

4) Remove the existing lamp socket assembly by removing the socket screws(2) located in the socket base. (A) Carefully remove the socket wires from the luminaire housing to expose wire connectors. (B) Remove the wire connectors. **Note:** If the luminaire is either a **High Pressure(HPS) or Pulse Start Metal Halide** type, there should be an additional wire (lamp ignitor wire) attached to the black wire on the lamp socket. After removing the socket wires ends from inside the luminaire, be certain that the wire ends remain outside to facilitate the installation of the new lamp socket.

5) **Drill a 3/8" hole at top of the reflector and insert a rubber grommet.** After removing the lamp socket determine where the MWM lamp socket cable should exit at the top of reflector. This will be determined in part by which side of the MWM lamp socket the cable will exit socket once secured in place. Be certain before drilling the 3/8" cable hole in reflector that the MWM Self-powered control module will mount on the same side of the luminaire housing as the exit hole. Also, be careful not to drill on or near the reflector and socket mounting brackets. After drilling the 3/8" hole insert the rubber grommet to protect the socket cable.

6) From the outside of the reflector, carefully insert the MWM lamp socket cable through the grommet opening. **Note:** If the MWM lamp socket cable is attached to the socket, first remove the cable from socket, then insert the socket-end of cable through the grommet opening. Allow yourself additional cable as needed to facilitate reconnecting the MWM lamp socket. Reconnect the cable to the lamp socket.

7) Install the new MWM porcelain lamp socket and cable assembly supplied. **IMPORTANT:** Use the MWM lamp socket and cable assembly included in the kit only. (A) Connect the MWM socket "brown" wire to the "black" or to the wire labeled "lamp" with the enclosed wire connectors. **Note:** If the luminaire has either a HPS or Pulse Start Metal Halide ballast, connect the lamp ignitor wire to the "brown" MWM socket wire also. B) Connect the remaining "white" or wire labeled "com" to the "white" MWM socket wire. Be certain that the wire connectors are secure before carefully pushing the wire connectors and extra wire length on the new lamp socket back into the luminaire housing opening. (C) Attach the MWM lamp socket to the luminaire with the 8-32 screws supplied with the socket. Do not over tighten screws, as this may crack or break the porcelain socket. Carefully push or pull extra socket cable as necessary through the grommet to properly adjust the cable.

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Installation Instructions for The MegaWattMizer(MWM) "Self Powered Bi-Level HID Lighting Kit"

(Cont'd) For Indoor High-Low Bay Metal Halide and HPS Luminaires(150-400W) Enclosed Reflector Design (Closed at top of reflector)

8) Re-install lamp into the newly installed MWM lamp socket. Turn the lamp until snug. Do not over tighten. If applicable, re-install the clean lens cover or wireguard onto the reflector.

9) Install the MWM Self-Powered Control Module onto the luminaire housing with one of the supplied mounting brackets by loosening the luminaire housing screws on one side of the housing above the reflector. Slip the bracket over the head of loosened screws and properly adjust the MWM Module and tighten screws. Make sure all the luminaire housing screws are snug.

10) Connect cable from the lamp socket to the MWM module by inserting the quick connect end of the socket cable into the corresponding quick connect on the self-powered control module. **Note:** If this MWM Bi-level Control Module is equipped with EnergyLink be sure that the selector switches are properly set. For the selector switch set-up refer to the enclosed instructions.

9) Connect the external control device cable, ie; occupancy sensors, daylighting, time clocks, etc., to the three(3) conductor connector labeled "controls" on the front cover of the MWM Self Powered Bi-level Control Module. If the module is equipped with EnergyLink "only the transmitting units" require an external control device. The receiving units do not require any additional control wiring to function properly. If the external control devices are equipped with their own power source do not connect the device to the lug labeled "-12VDC out" located on the front cover. Refer to the manufacturer's control device installation instructions for additional information.

11) Reconnect power to luminaire.

GES, INC.

EnergyLink

Setting-up the MWM Self-Powered HID Bi-Level Controls with the EnergyLink Wireless Feature

Selector Switches Location and Description: EnergyLink's Selector Switches are located at the top of the MWM HID control module. There are twelve (12) miniature (DIP) switches on each unit. The first set of eight(8) are labeled Luminaire and the second set of four(4) are labeled Grouping. A DIP switch is "on" in the up position and "off" in the down position. There are two types of MWM EnergyLink Units, the transmitting units, identified by RED label switch numbers, and the receiving units that have BLUE label switch numbers.

Transmitting Units (RED Switch Numbers): To properly control the HID bi-level operation, the transmitting units must be connected to one or more of the following devices: occupancy and/or daylighting sensors, timers, or energy management system(EMS). Connect the low voltage wiring of these devices to the appropriate orange wire lug connector indicated in the label diagram on the front of each MWM unit. The transmitting unit will supply +12VDC power out to the device, therefore, no additional low voltage power supplies are necessary. Each transmitting unit will communicate and control any number of corresponding receiving units(BLUE Numbers) with the identical Luminaire DIP switch settings.

Receiving Units (Blue Switch Numbers): Each receiving unit will communicate with one or more corresponding transmitting units with identical Luminaire DIP switch settings. It is not necessary to install low voltage control wires to receiving units. Maximum range is approximate 300 feet from a corresponding transmitter.

Luminaire DIP Switches: These are the first eight(8) DIP switches that are located on both the transmitting (RED) units and receiving (BLUE) units. These switches are set in identical positions "on" (up) or "off" (down) to dim or bring to full brightness all desired luminaires in a defined working environment or area.

Grouping DIP Switches: These are the last four(4) DIP switches located on both the transmitting (RED) units and receiving (BLUE) units. Set one of these DIP switches to the "on" (up) position for general control setup. This may be all the switch setting necessary when employing low voltage occupancy and/or daylighting sensors. Extended switch settings are available if an external remote transmitter, hand-held, vehicle mounted, remote time

clock, or Energy Management System(EMS), etc. are employed to control luminaires in two different groups independently or all together (all call).

EnergyLink Code Setup for Infrared Occupancy and/or Daylighting Controls for Warehouses

1) Set Luminaire Selector switch (1) of all luminaires in aisle(A)to the "on" (up) position, and switches 2 through 8 in the "off", (down) position.

2) Set one Grouping selector switch to the "on" (up) position. Record the respective aisle and luminaire numbers A1,A2,A3,A4,A5.....A etc., in the blank Luminaire rectangle located on each of the MWM control labels. A1 and A etc could be transmitting units(red) label selector switches and A2 to A etc. are receiving units(blue) label selector switches.

3) For luminaires in aisle (B) set the Luminaire selector switch(2) of all luminaires in aisle (B)to the "on" the(up) position and switch 1 and switches 3 through 9 "off", in the down position.

4) Set one Grouping selector switch to "on"(up) position. Note: Since the occupancy sensors will be the only method of controlling the MWM HID Bi-Level controls, the grouping selector switches in aisle (B) can be the same as aisle (A), or different, as long as at least one grouping selector switch is in the "on"(up) position. Now record the respective aisle and luminaire numbers B1,B2,B3,B4,B5....B etc, in the blank Luminaire rectangle on each of the MWM control labels.

5) Repeat steps 1 and 2 for as many aisles of luminaires that are located in the warehouse. Do not duplicate Luminaire switch selections. See the examples of some selector switch combinations.

Note: There are 256 different switch combinations employing the eight luminaire selector switches.

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EnergyLink

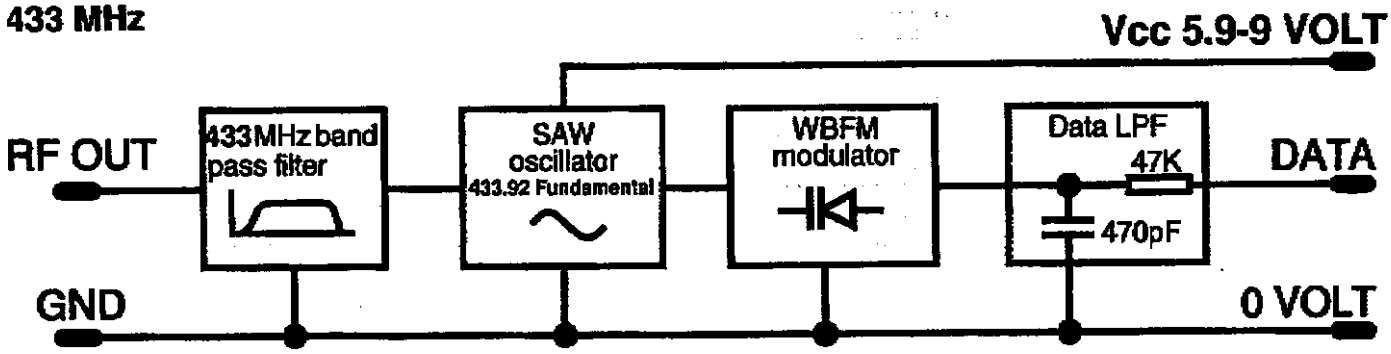
Examples of Selector Switch Combinations

U=On
D=Off

	Selector Switch# Luminaire								Grouping			
Aisle#	1	2	3	4	5	6	7	8	1	2	3	4
A	U	D	D	D	D	D	D	D	U	D	D	D
B	D	U	D	D	D	D	D	D	U	D	D	D
C	D	D	U	D	D	D	D	D	U	D	D	D
D	D	D	D	U	D	D	D	D	U	D	D	D
E	D	D	D	D	U	D	D	D	U	D	D	D
F	D	D	D	D	D	U	D	D	U	D	D	D
G	D	D	D	D	D	D	U	D	U	D	D	D
H	D	D	D	D	D	D	D	U	U	D	D	D
I	U	U	D	D	D	D	D	D	U	D	D	D
J	U	U	U	D	D	D	D	D	U	D	D	D
K	U	U	U	U	D	D	D	D	U	D	D	D
L	U	U	U	U	U	D	D	D	U	D	D	D
M	U	U	U	U	U	U	D	D	U	D	D	D
N	U	U	U	U	U	U	U	D	U	D	D	D
O	U	U	U	U	U	U	U	U	U	D	D	D
P	D	D	D	D	D	D	D	D	U	D	D	D
Q	D	U	D	U	D	U	D	U	U	D	D	D
R	U	D	U	D	U	D	U	D	U	D	D	D
S	D	U	U	D	D	D	D	D	U	D	D	D
T	D	U	U	U	D	D	D	D	U	D	D	D
U	D	U	U	U	U	D	D	D	U	D	D	D
V	D	U	U	U	U	U	D	D	U	D	D	D
W	D	U	U	U	U	U	U	D	U	D	D	D
X	D	U	U	U	U	U	U	U	U	D	D	D
Y	D	D	U	U	D	D	D	D	U	D	D	D
Z	D	D	D	U	U	D	D	D	U	D	D	D
AA	D	D	D	D	U	U	D	D	U	D	D	D
AB	D	D	D	D	D	U	U	D	U	D	D	D
AC	D	D	D	D	D	D	U	U	U	D	D	D
AD	D	D	U	U	U	D	D	D	U	D	D	D
AE	D	D	D	U	U	U	D	D	U	D	D	D
AF	D	D	D	D	U	U	U	D	U	D	D	D
AG	D	D	D	D	D	U	U	U	U	D	D	D
AH	D	D	D	U	U	U	U	U	U	D	D	D
AI	D	D	D	D	U	U	U	U	U	D	D	D
AJ	U	U	D	U	D	U	D	U	U	D	D	D
AK	U	U	U	D	U	D	U	D	U	D	D	D
AL	U	U	U	U	D	U	D	U	U	D	D	D
AM	U	U	U	U	U	D	U	D	U	D	D	D

EXHIBIT 5

BLOCK DIAGRAM & CIRCUIT DESCRIPTION



DESCRIPTION:

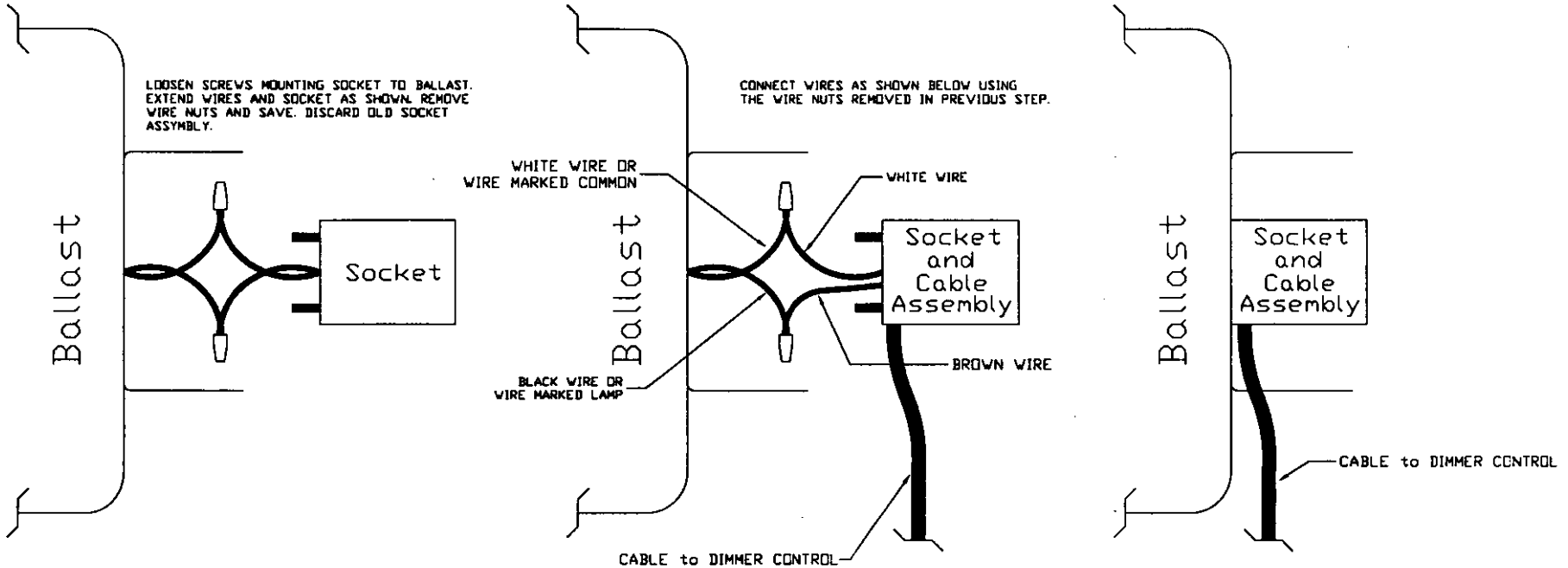
Digital encoder data keys SAW stabilized oscillator. Low pass filter couples saw stabilized oscillator to antenna formed as etched-circuit track.

BLOCK DIAGRAMS & CIRCUIT DESCRIPTIONS
FCC ID: AEYTXM-433

EXHIBIT 5

ws/pt15/

REVISIONS			
LTR	DESCRIPTION	DATE	APPROV.



DRAWN: M.J. KOVACEVICH 02-04-1999	µcom
CHECKED:	Microcon Design, Inc., 10948C Beaver Dam Road, Hunt Valley, MD 21030
ISSUED:	
CONTRACT:	
FILE NAME: \ACAD\J241\0061.DWG	
ACTIVE LAYERS: OUTLINE,OBJECT	

SIZE	SHEET	SCALE	DRAWING NUMBER	REV
B	1 of 1	N/A	2410061	0

Examples of Selector Switch Combinations(Cont'd)

U=On
D=Off

	Selector Switch# Luminaire								Grouping			
Aisle#	1	2	3	4	5	6	7	8	1	2	3	4
AN	U	U	U	U	U	U	D	U	U	D	D	D
AO	D	U	U	D	U	D	U	D	U	D	D	D
AP	D	U	U	D	U	U	D	D	U	D	D	D
AQ	D	U	U	D	U	U	D	U	U	D	D	D
AR	D	U	U	U	D	U	U	D	U	D	D	D
AS	D	U	U	U	D	U	U	U	U	D	D	D
AT	D	U	U	U	U	D	U	D	U	D	D	D
AU	D	D	U	U	U	U	U	D	U	D	D	D
AV	D	D	D	U	U	U	D	D	U	D	D	D
AW	D	D	D	U	U	U	D	U	U	D	D	D