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Rev.

26.9.2003

DEB 575/1200

Electronic Flicker Free Ballast DMX

MOD. 2515.210

INSTRUCTION AND MAINTENANCE MANUAL





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SECTION 1

1.1 - GENERAL

This new DEB electronic ballasts is designed to provide a compact, lightweight, flicker free power source for metal halide discharge lamps. The control circuit are managed by microprocessors (PIC) to reduce the components number and improve performances. In the ballast front panel there is a 8 characters led display to give various information like: lamp not connected, lamp power, fail, and more. New cooling system performed by multi speed fans and heat sink inside the ballast body and. New circuit with output short circuit and arc to ground protection. Dual power output with automatic selection. Power factor corrected input circuit to reduce the input current. Constant output power circuit to reduce the variations due to different lamp characteristics (different lamps brand and age). Very small size and weight. CE approved.

1.2 - CONTROLS

The controls for the ballast are all mounted on the front plate and comprise on the left hand side from the top: the two green and red buttons for on and off, the 8 characters display with three command buttons, the two control knobs for local/remote/DMX, and dimmer, the mains breaker, the DMX connectors, the input mains connector and the output lamp connector.



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SECTION 2

OPERATION & ROUTINE MAINTENANCE

2.1 - OPERATION

2.1.1 Ensure that a correctly sized connector has been fitted in relation to both the ballast output rating and the size of the mains supply. And the ground wire connected to a good ground.

CONNECTORS: 110 or 220 V – 15A or 7,5A

2.1.2. Ensure that the LOCAL – REMOTE - DMX switch is set for the control mode required.

LOCAL =Control is from the ballast or the lamp fixtures using the appropriate on / off buttons.

REMOTE = Lamp fixtures will operate immediately upon connection to the mains supply or operation of the MCB.

DMX = Lamp fixtures will operate accordingly with the commands received via DMX channel.

2.1.3. Ensure that the ballast should be put in a place with a good ventilation and possibly protect from the direct sun and rain and with the air inlets free.

2.1.4. Ensure that the lamp fixtures is fitted with an operational lamp.

2.1.5. Connect the lamp fixtures to the ballast using the cable supplied with the lamp fixtures, ensuring that the groove of the military specification connector along the inner body aligns with the pin on the internal face of the outer housing of the outlet, (on the face of the ballast) and push home. Take a grip of the outer sleeve of the cable connector and rotate clockwise. The twist lock will rotate through approximately 90% and then come positively to a stop.

2.1.6. Connect the ballast to the power supply and switch the power



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2.1.7. Lift the mains circuit breaker from the off position into the ON position. CAUTION If remote has been selected the lamp fixtures will operate after about two seconds, therefore ensure that the barn doors are open and that the lamp fixtures is not in proximity of any combustible material and not facing any persons, now the display after the start messages will show "READY"

2.1.9. The system is now ready for use and operation can be initiated from the on switch on the lamp fixtures or ballast.

2.1.10 The lamp fixtures will ignite irrespective of the dimmer setting and will reach its stable position after approximately 1 - 2 minutes from cold when it will automatically revert to the dimmer setting dialed up. Full clockwise rotation gives maximum rated output while full counterclockwise rotation will dim the light output by nominally 30% of its maximum rated value.

2.2 ROUTINE MAINTENANCE

2.2.1. Isolate the ballast from the mains supply.

2.2.2. Clean the ballast casing, removing all dust and grime, in particular from the air inlets.

2.2.3. Check the condition of the mains input cable and connector for signs of visible damage.

2.2.4. Check the multipin output socket for signs of damage or deformation.

2.2.5. Check for the free rotation of the dimmer control.

2.2.6. Ensure that the selector switch is set to local.



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SECTION 3

DISPLAY MESSAGES

SYSTEM FAIL
ERROR CONN.
LAMP NOT CONNECTED
READY 575
READY 1200
LAMP HEATING
LAMP ON 575 W
LAMP ON 1200 W
EARTH MISSING

IGNITION FAILED
TWO LAMP CONNECTED
HEAD NOT CONNECTED OR LENS OPEN
BALLAST READY WITH 575 LAMP CONNECTED
BALLAST READY WITH 1200 LAMP CONNECTED
LAMP HEATING TIME WITH DIMMER COMMAND INHIBIT
BALLAST SWITCH ON WITH 2.5 KW LAMP
BALLAST SWITCH ON WITH 4 KW LAMP
IF THE EARTH IS NOT CONNECTED, BLINK TWO SECOND
AFTER MAINS BREAKER SWITCH ON.

MESSAGES SHOW AFTER SELECTION X, DOWN ARROW, UP ARROW **PUSCHBUTTON**

HOOR 575
TOT XXXX
PAR XXXX
HOOR 1200
TOT XXXX
PAR XXXX
DIMMER LEVEL
DMX ADDRESS
OUT FREQ
AUTO 100HZ 120HZ

TOTAL BALLAST WORKING TIME 575 W
PARTIAL BALLAST WORKING TIME 575 W

TOTAL BALLAST WORKING TIME 1200W
PARTIAL BALLAST WORKING TIME 1200W
LIGHTING DISPLAY LEVEL (reg. In 4 level)
DMX ADDRESS (set between 1 to 512)
SELECT THE OUTPUT FRQUENCY

For reset the partial time counter press the up arrow when PAR XXXX is show.

The <> will blink if the DMX stream is currently present.



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BALLAST FAULT ANALYSIS

SYMPTOM	POSSIBLE CAUSE	REMEDY
<ul style="list-style-type: none"> Lamp fixtures fails to light up and make one flash for a short time. And the display message is "IGNITION FAILED". 	<ul style="list-style-type: none"> Lamp not fitted or blown. Connector not mated correctly or with oxidation in the contacts. Ballast fails to operate 	<ul style="list-style-type: none"> Fit operational lamp Re-make connection. Clean the oxidation from the contacts .
<ul style="list-style-type: none"> The lamp fails to light up and a noise is audible inside the housing of the lamp fixtures. And the display message is "IGNITION FAILED". 	<ul style="list-style-type: none"> Igniter in the lamp fixtures failed. High voltage cable damaged. Lamp holder damaged. Inverter circuit failure 	<ul style="list-style-type: none"> Replace igniter. Replace high voltage cables. Replace lamp holder. Check the inverter circuit
<ul style="list-style-type: none"> The lamp fails to light up And no noise is audible inside the housing of the lamp fixtures. And the display message is "IGNITION FAILED" 	<ul style="list-style-type: none"> Check igniter fuse 	<ul style="list-style-type: none"> Replace the fuse (3A)
<ul style="list-style-type: none"> The display is switch off and the ballast doesn't work 	<ul style="list-style-type: none"> Check the fuse. Check the power supply 	<ul style="list-style-type: none"> Replace the fuse (1,6A)



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SECTION 4

SPECIFICATION & MAIN FEATURES OF DESIGN AND OPERATION.

4.1 TECHNICAL SPECIFICATION.

4.1.1 Electrical Performance.

Input voltage	95 – 265 V
Nominal effective input current	2,9 A (575kw) - 6 A (1.2kw) 220V 6,0 A (575kw) - 12,3(1.2kw)110V
Efficiency (Average)	> 0.93
Power factor (Average)	> 0.95
Dimmer range	30 %
On/Off control	Local. Remote or DMX

4.1.2 Dimensions and Weight

Dimensions	Width 200 mm. Height 220 mm. Depth 340 mm.
Weight	9.5 kg.
Working position	Ballast with control panel facing front.
Ambient temperature & Humidity allowed	-20....+45° C IP23



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4.2 - GENERAL

4.2.1 Electronic ballasts have been designed to power Metal Halide Discharge and equivalent type discharge lamps.

4.2.2 Such lamps after the ignition and warm up period, work similarly to a bi-directional Zener diode, i.e. they fix the voltage at a constant value irrespective of the current they receive. Therefore to operate stability they require a current generator, a BALLAST.

4.2.3 The lamps steady (optimum) working voltage is lower than at the cold strike ignition and warm up period and is achieved approximately 2 minutes after a cold strike.

4.2.4 - A special igniter circuit is used to provide HIGH VOLTAGE (in the range of 15KV to 70KV dependent upon the lamp size) pulses for a few seconds to generate the arc between the lamps electrodes.

4.3 – BALLAST STRUCTURE

4.3.1 The structure of the DEB electronic ballasts can be sub-divided into three major elements, being :

- (a) Power Factor Corrector (PFC circuit)
- (b) Current Generator (Chopper circuit)
- (c) DC - AC Converter (Inverter circuit)
- (d) Microprocessor and Display circuit



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4.4 – SUMMARY PFC CIRCUIT

4.4.1 The function of the PFC circuit is to transform the A.C. mains voltage (95V – 265V - 50/60Hz) input, to a continuous voltage of about 385V at the output. With a sinusoidal mains current.

4.4.2 A special mains filter to prevent ballast generated noise from entering the mains for respect the CE normative, is inserted in the input circuit.

4.4.3 The PFC circuit works at high frequency and uses as switch power Mosfet.

4.5 – SUMMARY CHOPPER CIRCUIT DESCRIPTION

4.5.1 The chopper is the circuit regulating the current supplied to the lamp. It works at high frequency and uses as switch, power Mosfet.

4.6 – SUMMARY INVERTER CIRCUIT DESCRIPTION

4.6.1 The DC - AC converter is a square wave inverter working at 100 or 120 Hz in accordance with the mains frequency automatically. The frequency is generated from a 4 MHz quartz oscillator. The power switch used are the power IGBT, and the circuit is protected from short circuit and arc to ground.

4.7 – COMPARATION WITH MAGNETIC BALLAST

4.7.1 Compared with conventional wire wound magnetic ballasts, electronic ballasts offer considerable advantages :

4.7.2 Flicker Free performance, lamp power and frequency stabilization (the lamp is properly supplied independent from mains fluctuations).

4.7.3 The possibility to regulate (dim) the light intensity by approximately 30% from its maximum value.

4.7.4 The size and weight of these units is considerably less than those of conventional units.