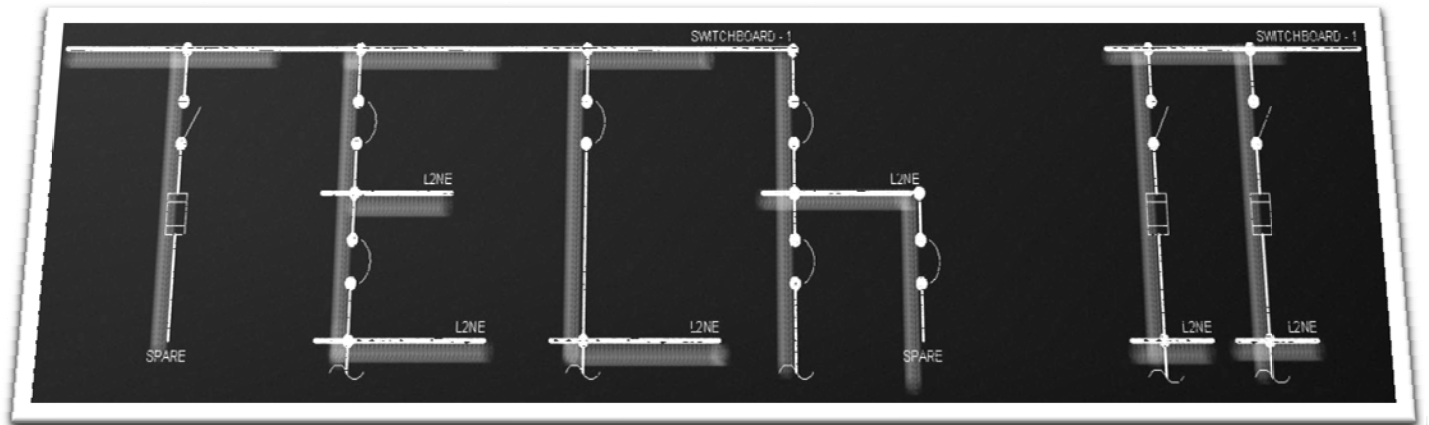


ST. FRANCIS FRIARY †



KRISTIN MARUSZEWSKI

LIGHTING/ELECTRICAL OPTION

ADVISED BY: DANNERTH

kRISTIN mARUSZEWSKI

LIIGHTING/eLECTRICAL oPTION

aDVISOR: dANNERTH

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LIgHTING/eLECTRICAL oPTION

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EXECUTIVE SUMMARY

The following report examines the electrical systems of the St. Francis Friary. Below is a brief summary of each category that is delivered with more in-depth descriptions in the report.

DISTRIBUTION SYSTEM: Power is supplied from Cullman Electric. It is then stepped down to 208Y/120V and distributed throughout the building using a Main Switchboard, Distribution Panelboards, and House Panelboards.

SERVICE ENTRANCE: The point at which the responsibility of the utility company ends and the responsibility of the owner commences is at the main transformer.

VOLTAGE SYSTEMS: The entire St. Francis Friary is served by a 208Y/120V, 3P, 4W system. Some exterior luminaires require localized transformers for 12V power.

TRANSFORMERS: One main transformer steps the utility company's 12.47V primary service down to 208Y/120V. Direct buried transformers in the courtyard step this down to 12V for exterior lgt.

EMERGENCY POWER SYSTEMS: A 125 KW Natural Gas Powered Standby Generator serves the Emergency Lighting and Mechanical equipment.

OVER-CURRENT DEVICES: Fuses in the main switchboard protect the distribution panelboards, elevator, and chiller. The panelboards are then protected by circuit breakers.

SWITCHGEAR LOCATION: The main switchgear is located in the lower level main electrical room. However, house panels, can be found on the first and second floor.

POWER FACTOR CORRECTION: No power factor correction equipment is specified.

DESIGN ISSUES: The entire Friary is served with a 208Y/120V, 3P, 4W system. This requires larger conductor sizes due to voltage drop.

LIGHTING LOADS: The interior luminaires use mainly incandescent lamps. The exterior luminaires use an even distribution of Metal Halide and High Pressure Sodium lamps.

MECHANICAL AND OTHER LOADS: There are Mechanical, Architectural, Kitchen, and Plumbing Loads on this project most of which are 208V, 3P.

SERVICE ENTRANCE SIZE: Based upon the different calculation methods used for each phase of the project, the 2000A service entrance on the project is sized correctly.

UTILITY COMPANY INFORMATION: Cullman Electrical Cooperative Utility Rates and Contact Information can be found in this section.

COMMUNICATION SYSTEMS: St. Francis Friary has two communication systems, a Fire Alarm system and a Data/Telecommunications system.

DISTRIBUTION SYSTEM

DESCRIPTION OF SYSTEM:

Cullman Electric Cooperative's 12.47KV, 3P,3W primary service is brought to a transformer located behind the exterior courtyard in the southeast corner of the site. From there, it is stepped down to a 208Y/120V,3P, 4W system and run to the main switchboard located in the lower level main electrical room. The switchboard serves the main distribution panel which feeds the other main circuit breaker panel boards as well as the elevator and the chiller. All panel boards are 208Y/120V,3P, 4W and serve power to the lighting, receptacles, mechanical equipment, kitchen equipment, and plumbing equipment.

SINGLE-LINE DIAGRAM AND FEEDER SCHEDULE:

A single-line diagram and a feeder schedule provide further detail of the distribution system. These can be found in Appendix A.

The drawings necessary for the completion of the single-line diagram and feeder schedule are as follows:

E 6.1| ELECTRICAL RISER DIAGRAM, MAIN SWITCHBOARD DISTRIBUTION SCHEDULE

E7.1| ELECTRICAL PANELBOARD SCHEDULES

E7.2| ELECTRICAL PANELBOARD SCHEDULES, EMERGENCY POWER DISTRIBUTION

SERVICE ENTRANCE

UTILITY AND OWNER RESPONSIBILITY:

Cullman Electric Cooperative of Cullman, Alabama, will provide a 7200V primary service to a pad-mounted transformer located in the southeast corner of the site where it is stepped down to 208Y/ 120V. The transformer is to be supplied and installed by Cullman Electric Cooperative. This transformer is the point at which the responsibility is exchanged from the utility company to the Archdiocese, the owner of the St. Francis Friary. The Archdiocese is responsible for providing the electrical equipment from this point forward, beginning with the feeder that runs from the transformer to the main switchgear located in the lower level main electrical room of the Friary.

VOLTAGE SYSTEMS

The entire building is served with a 208Y/120V, 3-phase, 4-wire system. The primary service is stepped down by a transformer to this 208Y/120V, 3-phase, 4-wire system which serves the Main Distribution Panel. The MDP then feeds the distribution panels, house panels, elevator, and chiller. Interior lighting, appliance, mechanical, kitchen, and elevator loads are all served by 208Y/120V.

Localized transformers are provided in the courtyard to supply the exterior luminaires with 12V power.

TRANSFORMERS

One transformer is required to step down the utility power, to the 208Y/120V, 3P, 4W system that is distributed throughout the interior of the Friary. This transformer is supplied and specified by Cullman Electric Cooperative.

TRANSFORMER SCHEDULE							
TAG	LOCATION	PRIMARY	SECONDARY	SIZE	TYPE	TEMP. RISE	MOUNTING
T	SOUTHEAST SITE	7.2 KV, 3P, 3W	208Y/120V,3P, 4W	SPECIFIED BY ELEC CO.	DRY	150°C	PAD

In addition, small, localized, [SEMPER FI DB300] direct-buried transformers distribute 12V power to the site luminaires.

EMERGENCY POWER SYSTEM(S)

St. Francis Friary has a 125 KW, 156kVA Natural Gas Standby Generator with a power factor of 80% located on the Southeast corner of the site. The generator supply emergency power to an emergency distribution panel. The EDP distributes the emergency power among three other panels serving the bathroom, corridor, chapel, and kitchen lighting, as well as the required mechanical systems. In the event of a power failure, an automatic transfer switch located in the lower level main electrical room, will switch from normal to emergency power. The maximum time lag between normal and emergency power is 10 seconds with an adjustable 0.5-5.0 second pause in neutral to avoid harmonics. The generator is fueled by natural gas and has a 12V starting battery, complete with an automatic charger mounted inside the generator housing.

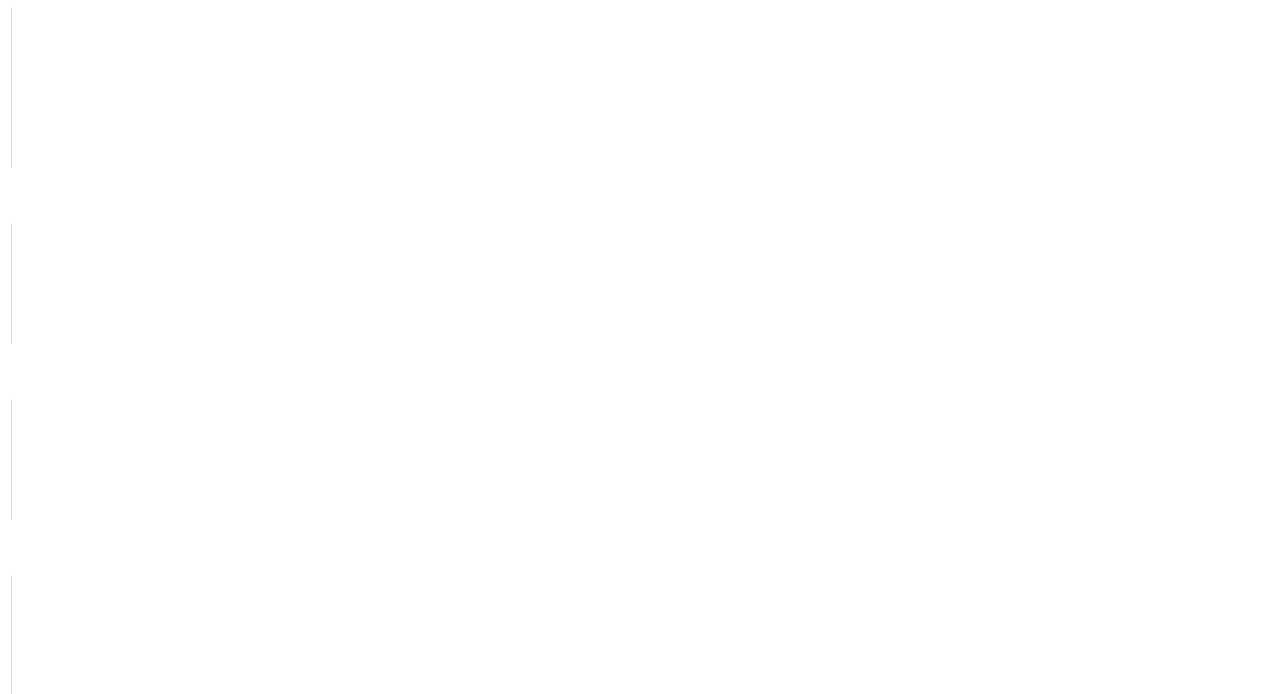
The other systems in the building that require emergency power are the exit lighting and the fire alarm control panel. The FACP is connected to the automatic transfer switch and receives power from the generator, but cannot afford the 10 second lag between normal and emergency power. Thus, the FACP has an integral power supply, battery pack and charger. The exit lighting is a small load and is run on 90 minute, minimum, battery packs.

OVER-CURRENT DEVICES

The main switchboard, with a bus rating of 2000A, has 8 active fused circuits and 4 spares. These Bussman fuses, rated at (1)600A, (5)400A, and (6) 225A, protect the chiller, elevator, and distribution panels. House panelboards are protected by thermal-magnetic, quick-break circuit breakers ranging from 100-200A. House panelboards have 1 and 3 pole breakers at 15-40A.

SWITCHGEAR LOCATION

The location of the main electrical equipment is as follows:



POWER FACTOR CORRECTION

The St. Francis Friary does not require any power factor correction devices.

DESIGN ISSUES

Power is distributed throughout all of St. Francis Friary at 208Y/120V. This poses a few design issues. Though the Friary is small in footprint, voltage drop is still a factor that needs to be taken into consideration. In a 208Y/120V system there is a higher percentage of voltage drop, which requires larger conductors. As well, the use of 208Y/120V limits choices of mechanical equipment, and the most efficient piece of equipment for the design cannot necessarily be specified.

LIGHTING LOADS

The interior lighting is comprised of incandescent and fluorescent lamps that provide a warm and welcoming appearance to the spaces. The exterior lighting uses metal halide lamps to provide crisp and cool light to wash the stone façade while incandescent lamps spotlight the statues of the stations of the cross.

A luminaire schedule and HID ballast cut sheets can be found in Appendix B.

MECHANICAL AND OTHER LOADS

mECHANICAL eQUIPMENT					
TAG	DESCRIPTION	LOAD	VOLTAGE & PHASE	PF	EQUIVALENT LOAD
CH-1	CHILLER	174 KVA	208V, 3P	0.95	165.3 KW
AHU-1	AIR HANDLER	3 KVA	208V, 3P	0.85	2.55 KW
AHU-2	AIR HANDLER	7 KVA	208V, 3P	0.95	6.65 KW
AHU-3	AIR HANDLER	1.5 KVA	208V, 3P	0.85	1.275 KW
AHU-4	AIR HANDLER	1.5 KVA	208V, 3P	0.85	1.275 KW
AHU-5	AIR HANDLER	1.5 KVA	208V, 3P	0.85	1.275 KW
AHU-6	AIR HANDLER	4 KVA	208V, 3P	0.85	3.4 KW
AHU-7	AIR HANDLER	3 KVA	208V, 3P	0.85	2.55 KW
AHU-8	AIR HANDLER	1 KVA	120V, 1P	0.85	0.85 KW
FCU-9	FAN COIL UNIT	1 KVA	208V, 2P	0.85	0.85 KW
FCU-10	FAN COIL UNIT	1.25 KVA	208V, 3P	0.85	1.0625 KW
FCU-11	FAN COIL UNIT	2 KVA	208V, 3P	0.85	1.7 KW
FCU-12	FAN COIL UNIT	1 KVA	120V, 1P	0.85	0.85 KW
FCU-13	FAN COIL UNIT	1.5 KVA	208V, 3P	0.85	1.275 KW
AHU-14	AIR HANDLER	1.5 KVA	208V, 3P	0.85	1.275 KW
AHU-15	AIR HANDLER	1 KVA	120V, 1P	0.85	0.85 KW
FCU-16	FAN COIL UNIT	1.5 KVA	208V, 3P	0.85	1.275 KW
FCU-17	FAN COIL UNIT	1.5 KVA	120V, 1P	0.85	1.275 KW
FCU-18	FAN COIL UNIT	1 KVA	120V, 1P	0.85	0.85 KW
FCU-19	FAN COIL UNIT	1.5 KVA	120V, 1P	0.85	1.275 KW
FCU-20	FAN COIL UNIT	1.5 KVA	120V, 1P	0.85	1.275 KW
FCU-21	FAN COIL UNIT	2 KVA	208V, 3P	0.85	1.7 KW
FCU-22	FAN COIL UNIT	1.5 KVA	208V, 3P	0.85	1.275 KW
FCU-23	FAN COIL UNIT	1.5 KVA	208V, 3P	0.85	1.275 KW
FCU-24	FAN COIL UNIT	1.5 KVA	208V, 3P	0.85	1.275 KW
FCU-25	FAN COIL UNIT	1.5 KVA	120V, 1P	0.85	1.275 KW
FCU-26	FAN COIL UNIT	0.5 KVA	120V, 1P	0.85	0.425 KW
FCU-27	FAN COIL UNIT	0.5 KVA	120V, 1P	0.85	0.425 KW
FCU-28	FAN COIL UNIT	0.5 KVA	120V, 1P	0.85	0.425 KW
				TOTAL	207.0125 KW

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pLUMBING eQUIPMENT					
TAG	DESCRIPTION	LOAD	VOLTAGE & PHASE	PF	EQUIVALENT LOAD
CHWP-1	CHILLED WATER	9 KVA	208V, 3P	0.95	8.55 KW
CHWP-2	CHILLED WATER	0 KVA	208V, 3P		KW
HWP-1	HOT WATER	7 KVA	208V, 3P	0.95	6.65 KW
HWP-2	HOT WATER	0 KVA	208V, 3P		KW
				tOTAL	15.2 KW

ASSUMPTIONS:

*If the motor is less than 5 hp, the PF is 0.85.

*If the motor is greater than 5 hp, the PF is 0.95.

SERVICE ENTRANCE SIZE

The St. Francis Friary's service entrance is sized at 2000A. Based upon the calculations that follow, this size is appropriate.

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REFERENCES:

¹Class Notes, “Load Information for Various Building Types” Table

² NEC 2005, Table 220.12 “General Lighting Loads by Occupancy”

UTILITY COMPANY INFORMATION

The Utility Company that serves the St. Francis Friary is Cullman Electric Cooperative. The utility rate structure is the General Power Rate – Schedule GSA.

Contact information for Cullman Electric Cooperative is listed below.

Cullman Electric Cooperative
1749 Eva Rd, NE
Cullman, AL 35055
(265)737-3200
www.cullmanec.com

COMMUNICATION SYSTEM(S)

FIRE ALARM SYSTEM:

The electrically operated fully addressable fire alarm system installed through the St. Francis Friary, is used to alert occupants in the event of a fire. The 120V, 1P, 2W Fire Alarm Control Panel is located in the lower level main electrical room. The FACP is complete with battery pack and charger and is also connected to the Standby Generator for consistent power supply. It serves the strobes, horns, smoke detectors, duct heat detectors, and the flow and tamper switches for the sprinkler system. The system controls are interlocked to shutdown power to the air handling units, fans, elevator and kitchen equipment while triggering the operation of smoke control system fans and control dampers.

TELECOMMUNICATION/DATA SYSTEM:

The data and telephone system installed in the St. Francis Friary supplies the Friary offices with internet and phone capabilities. A #4AWG copper wire in 1" EMT in the lower level main electrical room connects to the local telephone server. Conductors are fed from this point through the ceiling plenums in a 1" EMT conduit to the outlets. Data and telephone outlets can be found in the first floor offices, library and mailroom.

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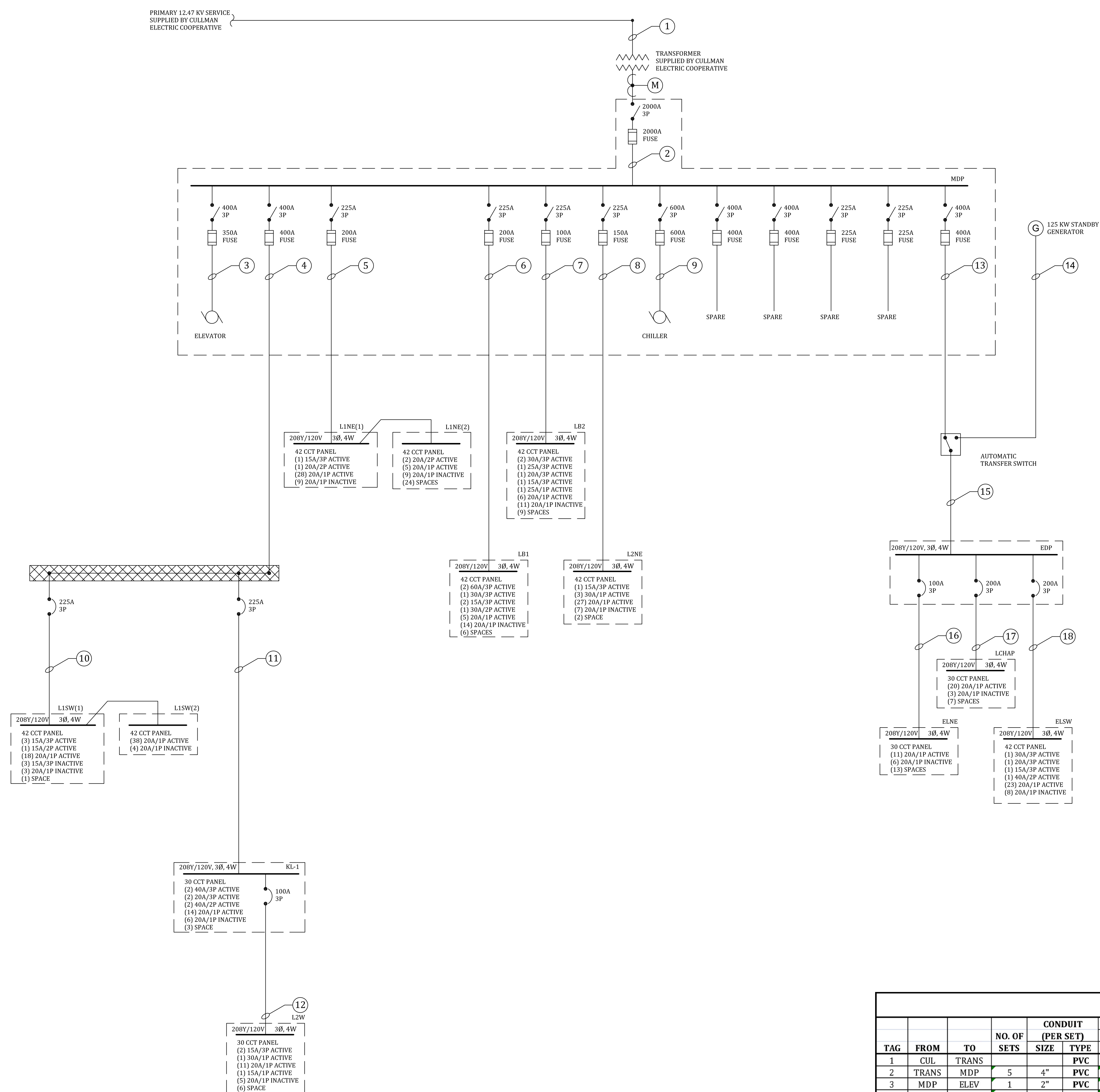
**A | APPENDIX | SINGLE LINE DIAGRAM
| FEEDER SCHEDULE**



KRISTIN MARUSZEWSKI
AE 481W
NOVEMBER 02, 2007

ST. FRANCIS FRIARY

HANCEVILLE, ALABAMA



FEEDER SCHEDULE																	
TAG	FROM	TO	NO. OF SETS	CONDUIT (PER SET)		CONDUCTORS (PER SET)						SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE				
				SIZE	TYPE	PHASE CONDUCTORS		NEUTRAL CONDUCTORS		GROUND CONDUCTORS							
				No.	SIZE	TYPE	No.	SIZE	TYPE	No.	SIZE			TYPE			
1	CUL	TRANS	5	4"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#1/0	CU THWN	2000A	2000A/3P	
2	TRANS	MDP	1	2"	PVC	3	#3/0	CU THWN	0	--	CU THWN	1	#4	CU THWN	350A	400A/3P	
3	MDP	ELEV	1	2"	PVC	3	#3/0	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	400A	400A/3P	
4	MDP	TROUGH	1	3"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	200A	225A/3P	
5	MDP	L1NE	1	2"	PVC	3	#3/0	CU THWN	1	#3/0	CU THWN	1	#2	CU THWN	200A	225A/3P	
6	MDP	LB1	1	2"	PVC	3	#3/0	CU THWN	1	#3/0	CU THWN	1	#2	CU THWN	100A	225A/3P	
7	MDP	LB2	1	1 1/4"	PVC	3	#3	CU THWN	1	#3	CU THWN	1	#8	CU THWN	150A	225A/3P	
8	MDP	L2NE	1	2"	PVC	3	#1/0	CU THWN	1	#1/0	CU THWN	1	#6	CU THWN	600A	600A/3P	
9	MDP	CHILLER	2	3"	PVC	3	300kcmil	CU THWN	1	300kcmil	CU THWN	1	#4	CU THWN	225A	225A/3P	
10	TROUGH	L1SW	1	3"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	100A	100A/3P	
11	TROUGH	KL-1	1	3"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	200A	200A/3P	
12	KL-1	L2W	1	2"	PVC	3	#1	CU THWN	1	#1	CU THWN	1	#8	CU THWN	400A	400A/3P	
13	MDP	ATS	1	3"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	600A	600A/3P	
14	GEN	ATS	1	3"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	100A	100A/3P	
15	ATS	EDP	1	3"	PVC	3	500kcmil	CU THWN	1	500kcmil	CU THWN	1	#3	CU THWN	200A	200A/3P	
16	EDP	ELNE	1	1 1/4"	PVC	3	#3	CU THWN	1	#3	CU THWN	1	#8	CU THWN	200A	200A/3P	
17	EDP	LCHAP	1	2 1/2"	PVC	3	#3/0	CU THWN	1	#3/0	CU THWN	1	#6	CU THWN	200A	200A/3P	
18	EDP	ELSW	1	1 1/4"	PVC	3	#3	CU THWN	1	#3	CU THWN	1	#8	CU THWN	200A	200A/3P	

SINGLE-LINE DIAGRAM
FEEDER SCHEDULE
ELECTRICAL

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**B | APPENDIX | LUMINAIRE SCHEDULE
| BALLAST CUT SHEETS**

IUMINAIRE sCHEDULE

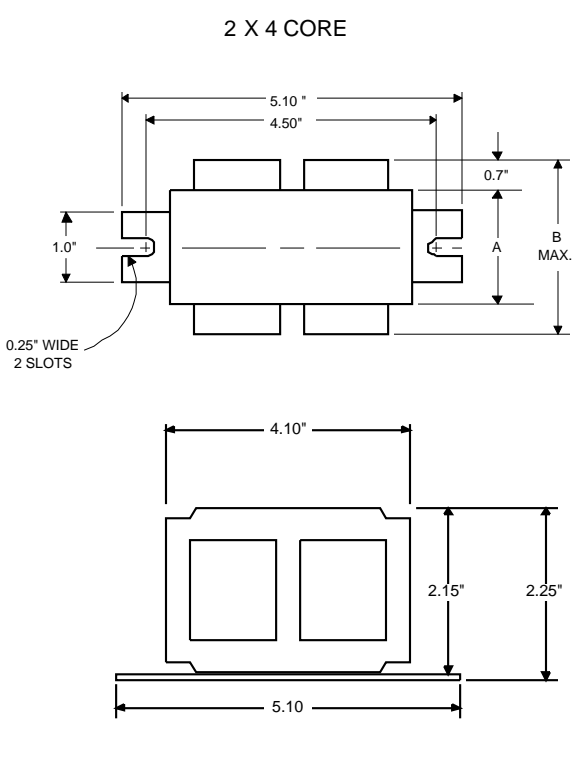
TAG	LAMP TYPE	WATTS/LAMP	# OF LAMPS	BALLAST TYPE	OPERATING VOLTAGE	INPUT WATTS	BF	PF	START AMPS	OPER. AMPS
A	100W MEDIUM BASE	100W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
B	75W MEDIUM BASE	75W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
C	75W MEDIUM BASE	75W	3	N/A	120V	N/A	N/A	N/A	N/A	N/A
D	75W MEDIUM BASE	75W	3	N/A	120V	N/A	N/A	N/A	N/A	N/A
F	40W CANDELABRA BASE	40W	2	N/A	120V	N/A	N/A	N/A	N/A	N/A
G	100W MEDIUM BASE	100W	2	N/A	120V	N/A	N/A	N/A	N/A	N/A
H	100W MEDIUM BASE	100W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
K	26DTT	26W	2	ELECTRONIC	120V	51	0.98	1.0	0.43	0.43
K1	26DTT	26W	2	ELECTRONIC	120V	51	0.98	1.0	0.43	0.43
K2	26DTT	26W	2	ELECTRONIC	120V	51	0.98	1.0	0.43	0.43
L	100W MEDIUM BASE	100W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
N	3210T8	32W	4	ELECTRONIC	120V	63	0.88	0.99	0.53	0.53
P	35WG8	35W	4	ELECTRONIC	120V	80	1.0	0.99	0.67	0.67
R	40W CANDELABRA BASE	40W	8	N/A	120V	N/A	N/A	N/A	N/A	N/A
T	100W MEDIUM BASE	100W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
U	100W MEDIUM BASE	100W	2	N/A	120V	N/A	N/A	N/A	N/A	N/A
V	3210T8	32W	2	ELECTRONIC	120V	63	0.88	0.99	0.53	0.53
V2	3210T8	32W	2	ELECTRONIC	120V	63	0.88	0.99	0.53	0.53
W	150WMH	150W	1	PULSE START	120V	189	0.90	0.90	0.95	1.75
Y	100WA-LAMP	100W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
HH	100W MEDIUM BASE	100W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
X	LED	1W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
X1	LED	1W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
X2	--	--	--	--	--	--	--	--	--	--
X3	LED	1W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
X4	35W MR-16	35W	2	N/A	120V	N/A	N/A	N/A	N/A	N/A
X5	8W HALOGEN	8W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
X6	5.4W KRYPTON	5.4W	1	N/A	120V	N/A	N/A	N/A	N/A	N/A
S-1	150W HPS	150W	1	CWA	208V	190	0.90	0.90	0.56	0.95
S-2	150W HPS	150W	1	CWA	208V	190	0.90	0.90	0.56	0.95
S-3	70W MHT-6	70W	1	PULSE START	120V	94	0.90	0.90	1.00	0.85
S-4	20W HALOGEN	20W	1	N/A	12V	N/A	N/A	N/A	N/A	N/A
S-5	35W MR-16	35W	1	N/A	12V	N/A	N/A	N/A	N/A	N/A
S-6	70W MHT-6	70W	1	PULSE START	120V	94	0.90	0.90	1.00	0.85
S-7	35W MHT-6	35W	1	PULSE START	120V	55	0.90	0.90	0.45	0.5



Metal Halide Lamp Ballast

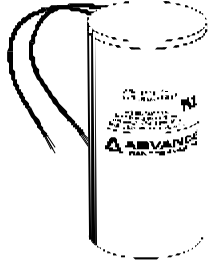
Catalog Number 71A5005P
For 35/39W M130
60 Hz HX-HPF
Status: Active

DIMENSIONS AND DATA



INPUT VOLTS	120			
CIRCUIT TYPE	HX-HPF			
POWER FACTOR (min)	90%			
REGULATION				
Line Volts	±5%			
Lamp Watts	±10%			
LINE CURRENT (Amps)				
Operating.....	0.50			
Open Circuit.....	1.10			
Starting.....	0.45			
UL TEMPERATURE RATINGS				
Insulation Class	H(180°C)			
Coil Temperature Code	1029	A		
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C			
NOM. OPEN CIRCUIT VOLTAGE	230			
INPUT VOLTAGE AT LAMP DROPOUT.....	100			
INPUT WATTS	55			
RECOMMENDED FUSE (Amps).....	3			
CORE and COIL				
Dimension (A)	0.83			
Dimension (B)	1.70			
Weight (lbs.)	2			
Lead Lengths	12"			
CAPACITOR REQUIREMENT				
Microfarads	28.0			
Volts (min.)	120			
Fault Current Withstand (amps)				
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)				
High Potential Test (Volts)				
1 minute	2000			
2 seconds	2500			
Open Circuit Voltage Test (Volts)	205-255			
Short-Circuit Current Test (Amps)				
Secondary Current	0.60-0.75			
Input Current.....	0.30	-	-	-
	0.50			

Capacitor: 7C280M12



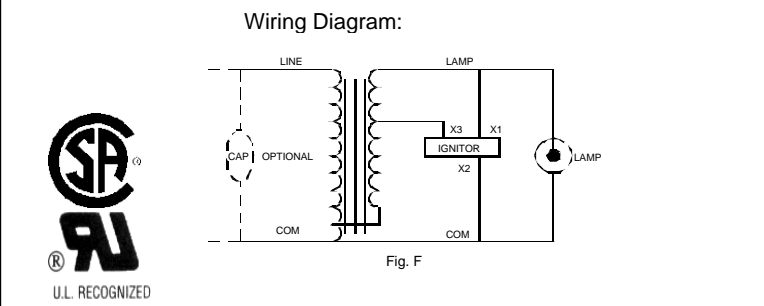
Capacitance: 28
 Dia/Oval Dim: 1.5
 Height: 2.9

Temp Rating: 105°C

Ignitor: LI533-H4



Ballast to Lamp Distance (BTL) = 15 feet
 Temp Rating: 105°C



Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description
500D.	Ballast With Ignitor and Dry Film Capacitor
510D.	Ballast w/Welded Bracket, Ignitor, & Dry Film Capacitor
600.	Ballast and Ignitor, No Capacitor
610.	Ballast with Welded Bracket and Ignitor, No Capacitor

Data is based upon tests performed by Advance Transformer in a controlled environment and is representative of relative performance. Actual performance can vary depending on operating conditions. Specifications are subject to change without notice.

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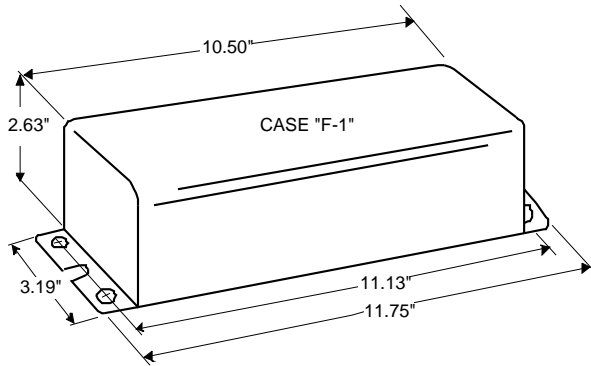
06/22/00



**Metal
Halide
Lamp Ballast**

**Catalog Number 72C5281
For 70W M139
60 Hz HX-HPF
Status: Active**

DIMENSIONS AND DATA



INPUT VOLTS	120	277			
CIRCUIT TYPE	HX-HPF				
POWER FACTOR (min)	90%				
REGULATION					
Line Volts	±5%				
Lamp Watts	±10%				
LINE CURRENT (Amps)					
Operating.....	0.85	0.37			
Open Circuit.....	1.70	0.75			
Starting.....	1.00	0.45			
UL TEMPERATURE RATINGS					
Insulation Class	A (105°C)				
Coil Temperature Code	1029				
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C				
NOM. OPEN CIRCUIT VOLTAGE	240				
INPUT VOLTAGE AT LAMP DROPOUT.....	100	225			
INPUT WATTS	94				
RECOMMENDED FUSE (Amps).....	5	2			
CORE and COIL					
Dimension (A)					
Dimension (B)					
Weight (lbs.)	8.5				
Lead Lengths	12"				
CAPACITOR REQUIREMENT					
Microfarads					
Volts (min.)					
Fault Current Withstand (amps)					
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)					
High Potential Test (Volts)					
1 minute	1500				
2 seconds	2500				
Open Circuit Voltage Test (Volts)	215-265				
Short-Circuit Current Test (Amps)					
Secondary Current	1.05-1.35				
Input Current.....	0.60	0.25	-	-	-
	1.10	0.50			

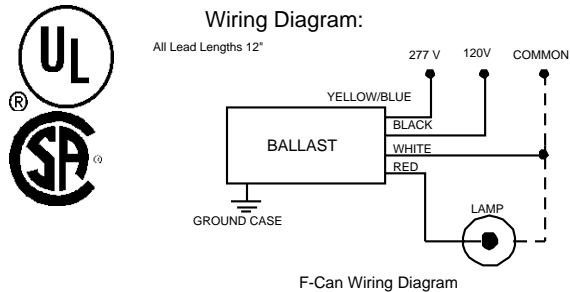
Capacitor:

The capacitor is included as part of the potted assembly.

Ignitor: IN CAN

The ignitor is included as part of the potted assembly.

Ballast to Lamp Distance
(BTL) = 5 feet
Temp Rating: 90°C



Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description

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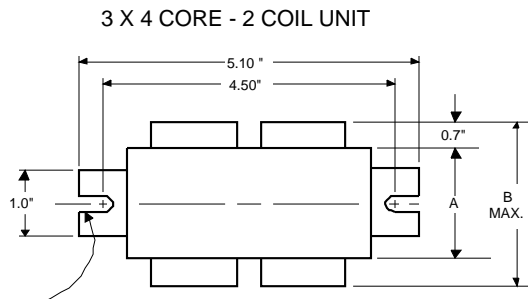
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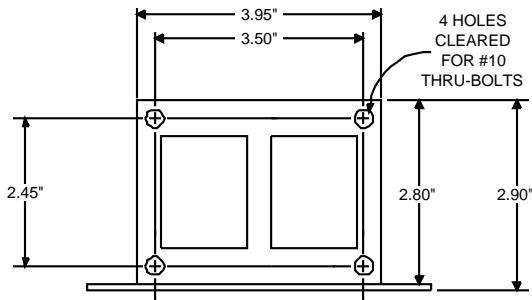
**Metal
Halide
Lamp Ballast**

**Catalog Number 71A5486
For 150W M81
60 Hz CWA
Status: Active**

DIMENSIONS AND DATA



0.25" WIDE
2 SLOTS



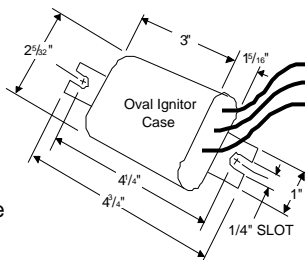
INPUT VOLTS	120	277			
CIRCUIT TYPE	CWA				
POWER FACTOR (min)	90%				
REGULATION					
Line Volts	±10%				
Lamp Watts	±10%				
LINE CURRENT (Amps)					
Operating.....	1.75	0.76			
Open Circuit.....	1.40	0.60			
Starting.....	0.95	0.40			
UL TEMPERATURE RATINGS					
Insulation Class	H(180°C)				
Coil Temperature Code	1029				
MIN. AMBIENT STARTING TEMP.	-20°F or -30°C				
NOM. OPEN CIRCUIT VOLTAGE	187				
INPUT VOLTAGE AT LAMP DROPOUT.....	90	208			
INPUT WATTS	189				
RECOMMENDED FUSE (Amps).....	5	2			
CORE and COIL					
Dimension (A)	2.65				
Dimension (B)	3.80				
Weight (lbs.)	8.5				
Lead Lengths	12"				
CAPACITOR REQUIREMENT					
Microfarads	22.5				
Volts (min.)	240				
Fault Current Withstand (amps)					
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)					
High Potential Test (Volts)					
1 minute	2000				
2 seconds	2500				
Open Circuit Voltage Test (Volts)	165-205				
Short-Circuit Current Test (Amps)					
Secondary Current	2.50-3.00				
Input Current.....	0.60	0.25	-	-	-
	1.05	0.45			

Capacitor: 7C225P30-R



Capacitance: 22.5
Dia/Oval Dim: 1.75
Height: 3.75
Temp Rating: 105°C

Ignitor: LI523-H5



Ballast to Lamp Distance (BTL) = 2 feet
Temp Rating: 90°C



Wiring Diagram:

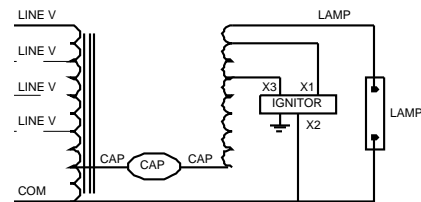


Fig. L

Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description
500D.	Ballast With Ignitor and Dry Film Capacitor
510D.	Ballast w/Welded Bracket, Ignitor, & Dry Film Capacitor
600.	Ballast and Ignitor, No Capacitor
610.	Ballast with Welded Bracket and Ignitor, No Capacitor

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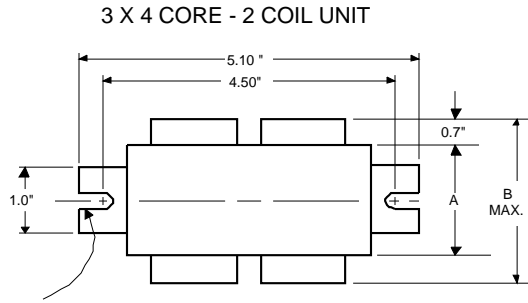
01/20/99



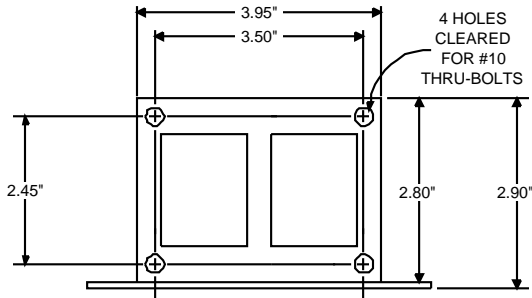
**High Pressure
Sodium
Lamp Ballast**

**Catalog Number 71A8118
For 150W S55
60 Hz CWA
Status: Active**

DIMENSIONS AND DATA



0.25" WIDE
2 SLOTS

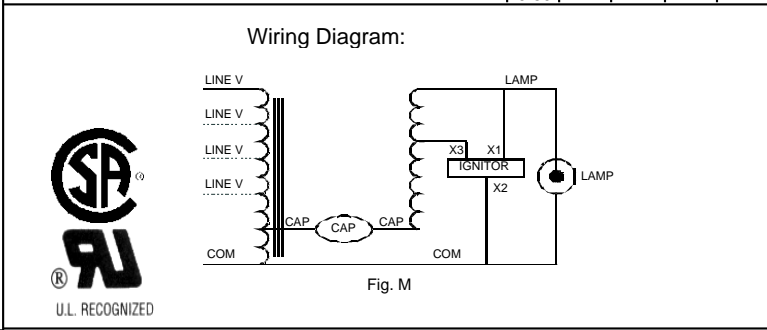


INPUT VOLTS	208			
CIRCUIT TYPE	CWA			
POWER FACTOR (min)	90%			
REGULATION				
Line Volts	±10%			
Lamp Watts	WITHIN TRAPEZOID			
LINE CURRENT (Amps)				
Operating.....	0.95			
Open Circuit.....	0.56			
Starting.....	0.56			
UL TEMPERATURE RATINGS				
Insulation Class	H(180°C)			
Coil Temperature Code	1029	D		
MIN. AMBIENT STARTING TEMP.	-40°F or -40°C			
NOM. OPEN CIRCUIT VOLTAGE	110			
INPUT VOLTAGE AT LAMP DROPOUT.....	156			
INPUT WATTS	190			
RECOMMENDED FUSE (Amps).....	2			
CORE and COIL				
Dimension (A)	2.80			
Dimension (B)	4.10			
Weight (lbs.)	8.5			
Lead Lengths	12"			
CAPACITOR REQUIREMENT				
Microfarads	55.0			
Volts (min.)	170			
Fault Current Withstand (amps)				
60 Hz TEST PROCEDURES (Refer to Advance Test Procedure for HID Ballasts - Form 1270)				
High Potential Test (Volts)				
1 minute				
2 seconds	2000			
Open Circuit Voltage Test (Volts)	2500			
Short-Circuit Current Test (Amps)	100-120			
Secondary Current				
Input Current.....	3.90-4.80	0.40	-	-
		0.60	-	-

Capacitor: 7C550P24



Capacitance: 55
Dia/Oval Dim: 1.75
Height: 5.15
Temp Rating: 105°C



Ignitor: LI551-J4



Ballast to Lamp Distance
(BTL) = 10 feet
Temp Rating: 105°C

Typical Ordering Information

(please call Advance for suffix availability)

Order Suffix	Description
500D.	Ballast With Ignitor and Dry Film Capacitor
510D.	Ballast w/Welded Bracket, Ignitor, & Dry Film Capacitor
600.	Ballast and Ignitor, No Capacitor

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07/03/97