Corbin Building

Technical Assignment 2

Matthew Trethaway
Lighting/ Electrical
AE 481W
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Advisor: Ted Dannerth

Executive Summary

The following report is an overview and analysis of the existing electrical system for the Corbin Building in New York City, NY. The 53,000 square foot building is a multi-use facility composed of street level retail and eight floors of open office space. The building is to accommodate a variety of store and office configurations therefore the electrical system needs to be flexible to control the building systems.

The documentation and analysis includes an overall summary of the electrical system including power distribution, utility information, service entrance, voltage system, emergency system and major equipment and loads. The service entrance size was calculated three ways to show the size of the system for each design phase. Communication systems summary was provide for each system in the building.. A single-line diagram is included to show the electrical distribution system thought the building starting at the service entrance and ending at the branch circuit panels.

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Section 1: Power Distribution Systems

Summary

The electrical distribution system in the Corbin Building is provided by Con Edison. The service entrance comes from the fifth floor of the Fulton Street Transit Center (FSTC), which is the neighboring building on the north-side. The service entrances enters the Corbin Building on the fifth floor and goes down to the basement to feed a 1200A switchboard with a AIC rating of 100K which than services other branch circuits of the electrical system.

There are two voltages in the building, the primary voltage is 265/460V, 3PH, 4W and the secondary voltage is 120/208V, 3PH, 4W. The mechanical, escalator and elevator systems run on 460V. The lighting and plug loads run on 120V. The emergency backup system consists of a UPS to operate the emergency lights.

Utility Company Information

The utility company for the Corbin building is Con Edison. They are located at Cooper Station P.O. Box 138, New York, NY 10276-0138 and can be contacted at 1-800-75-CONED. There website is http://www.coned.com/.

The Corbin Building is classified as a large general commercial building for its rate schedule. The large general commercial building rate was selected because the Corbin Building is sharing a utility from the neighboring FSTC. The power bought from Con Edison is considered low tension alternating current at 60 hertz. There rate is based on a low tension service table Figure 1. There are two different rates, one for the summer months (June-September) and another rate for the rest of the year. The rates are based on the total amount of energy used in a tiered rate system.

a) Demand Delivery Charges, per kilowatt of maximum demand

	Low Tension Service	High Tension Service
Charges applicable for the months of June, July, August, and September		
first 5 kW (or less)	$117.14 per month	$90.59 per month
next 95 kW	$21.62 per kW	$16.55 per kW
over 100 kW	$20.94 per kW	$15.87 per kW
Charges applicable for all other months		
first 5 kW (or less)	$93.62 per month	$67.07 per month
next 95 kW	$17.22 per kW	$12.15 per kW
over 100 kW	$16.54 per kW	$11.47 per kW

Minimum Charge: The minimum Delivery Demand Charge for any monthly billing period shall be the charge for 5 kW of demand.

b) Energy Delivery Charges, per kilowatthour

	Low Tension Service	High Tension Service
Charges applicable for all months	2.25 cents per kWhr	2.10 cents per kWhr

(Table 1 courtesy of Con Edison)

Service Entrance

The service entrance is a complex maze for the Corbin Building. Con Edison has two separate feeds coming into two separate transformer vaults in the sub-basement of the Corbin Building on the street side (south). Two 15kV service cables go into a concrete ductbanks which goes down through the foundation of the building and under the sub-basement, then rises up the north wall in the Fulton Street

Transit Center to the sixth floor. The service then feeds the four transformers owned by the MTA. Transformers are feed with three-phase 460V four-wire plus ground 4000A bustduct down to the fifth floor of FSTC to a CT cabinet. The busduct feeding the CT cabinet is metered to monitor usage. A 2000A fused CT cabinet a feeds the Corbin Building. The feeder is routed through the fire-rated wall between FSTC and Corbin Building and goes down a shaft in the electrical closet (C503) on the fifth floor to the basement level electrical room (CP03) to a 1200A switchboard which contains a meter to monitor usage.

Voltage Systems

The Corbin Building has two utilization voltages within the building. The primary voltage is 265/460V, 3PH, 4W. The secondary voltage is 120/208V, 3PH, 4W. 460V, 3PH is distributed to the escalator equipment, elevators, and also the mechanical equipment. Some of the unit heaters and small mechanical pumps operate at 208V, 1PH or 208V, 3PH, while lighting and receptacle loads operate at 120V, 1PH.

Emergency Power System

The emergency system is feed from the FSTC backup generators to a UPS located in the electrical room in the basement of the Corbin Building. The 30kVA UPS input is 460V, 3PH, 3W plus ground and outputs 208V, 3PH, 4W +G. There is enough storage in the batteries to operate 24kW for 15 minutes. All the emergency lighting and exit signs are connected to the UPS so they do not flicker when power is lost.

Locations of Switchgear

The location of the switchboard is in the basement level electrical room of the Corbin Building. There are two distribution boards in the electrical room; one serves the panelboards on the sub-basement to the fourth floor and the other board serves panels on floors five to eight. Also, both the transformers are located within the electrical room. The escalator control room in the sub-basement contains a distribution board for all the escalator equipment. In the elevator machine room on the ninth floor there is an elevator distribution board. Each floor contains an electrical closet which the utility shaft rising through it.

Major Pieces of Equipment

				Main		Rating			Room		Drawing	
Tag	Type of Equipment	Voltage	Phase	Type	Size	Bus Size	KAIC	Floor Level	Number	Name	Scale	Number
DBC	Switchboard	265/460V	3PH	MCB	800	1200	100	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
DB-5/8	Distribution Panel Board	120/208V	3PH	MCB	500	600	65	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
DB-S/4	Distribution Panel Board	120/208V	3PH	MCB	500	600	65	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
PP-C3	Distribution Panel Board	265/460V	3PH	MCB	150	225	22	Level 3	C303	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-601
PP-C6	Distribution Panel Board	265/460V	3PH	MCB	150	225	22	Level 6	C603	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
PP-C8	Distribution Panel Board	265/460V	3PH	MCB	150	225	22	Level 8	C803	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
EMC	Distribution Panel Board	265/460V	3PH	MCB	100	100	22	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
UPS	UPS							Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
DB-ESC5758	Distribution Panel Board	265/460V	3PH	MCB	225	225	65	Basement	CM02A	Lower Escl Control Room	1/4"=1'-0"	4G-BE-C-X-604
PP-CP	Distribution Panel Board	265/460V	3PH	MCB	150	225	65	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
DB-EL5455	Distribution Panel Board	265/460V	3PH	MCB	100	225	100	Level 9	C907	Elevator Machine Room	1/4"=1'-0"	4G-BE-C-X-603

Lighting And Appliance Panel Boards												
				Main		Rating			Room		Drawing	
Tag	Type of Equipment	Voltage	Phase	Type	Size	Bus Size	KAIC	Floor Level	Number	Name	Scale	Number
LP-CS	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
LP-C2	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 2	C203	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-601
LP-C3	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 3	C303	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-601
LP-C4	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 4	C403	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-601
LP-C5	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 5	C503	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
LP-C6	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 6	C603	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
LP-C7	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 7	C703	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
LP-C8A	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 8	C803	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
LP-C8B	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Level 8	C803	Electrical Closet	1/4"=1'-0"	4G-BE-C-X-602
LP-CU	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
RP-ESC5758	Appliance Panel Board	120/208V	3PH	MCB	150	225	22	Basement	CM02A	Lower Escl Control Room	1/4"=1'-0"	4G-BE-C-X-604
LP-CP	Lighting Panel Board	120/208V	3PH	MCB	150	225	22	Basement	CP03	Electrical Room	1/4"=1'-0"	4G-BE-C-X-601
RP-EL5455	Appliance Panel Board	120/208V	3PH	MCB	50	100	22	Level 9	C907	Elevator Machine Room	1/4"=1'-0"	4G-BE-C-X-603

Over-Current Devices

The only types of over-current protection device on the electrical system are circuit breakers. The main switchboard uses an 800A three-pole main circuit breaker (MCB) with an AIC rating of 100K. The distribution boards include over-circuit breakers with ranges from 100A to 400A. All breakers serving panelboards or transformers are three-pole circuit breakers. Distribution panelboards DB-5/8, DB-S/4, DB-ESC5758 range from 150A to 500A three-pole circuit breaker with an AIC rating of 65K and DB-EL5455 has a 225A three-phase with AIC rating of 100K. Typical lighting and appliance panelboards have a main three-pole circuit breaker with a 50A or 150A rating and an AIC rating of 22K.

Transformers

All the transformers in the Corbin building have a primary voltage of 460V, 3PH, 3W delta and a secondary voltage of 208Y/120V, 3PH, 4W. Specification requirements for all transformers must be dry-type with a maximum temperature rise of 80°C, include a concrete pad six-inches thick and K-13 rated. The transformers secondary taps need to have two and half percent and five percent full capacity above and below normal voltage.

Transformers								
Tag	Primary Voltage	Secondary Voltage	Size (kVA)	Type	Temp. Rise	Taps	Mounting	Remarks
T6-C5/8	460V, 3PH, 3W	208Y/120V, 3PH, 4W	150	Dry Type	80°C	(2) 2.5%	Pad Mounted on Floor	K-13 Rated
T6-CS/4	460V, 3PH, 3W	208Y/120V, 3PH, 4W	150	Dry Type	80°C	(2) 2.5%	Pad Mounted on Floor	K-13 Rated
T2-CP	460V, 3PH, 3W	208Y/120V, 3PH, 4W	30	Dry Type	80°C	(2) 2.5%	Pad Mounted on Floor	K-13 Rated
T3-CP	460V, 3PH, 3W	208Y/120V, 3PH, 4W	45	Dry Type	80°C	(2) 2.5%	Pad Mounted on Floor	K-13 Rated
T1-EL54	460V, 3PH, 3W	208Y/120V, 3PH, 4W	15	Dry Type	80°C	(2) 2.5%	Pad Mounted on Floor	K-13 Rated

Special Equipment

The Corbin Building has a lightning protection system on the roof. The lighting protection consist of air terminals are located on the parameters of the building and also on top of the mechanical equipment. The lightning system is grounded to the building steel.

Lighting Loads

The lighting system in the Corbin Building consists of fluorescent and incandescent sources. All the lighting in the building is operating at 120V. In the offices there are direct/ indirect fluorescent two T8 lamps pendant fixtures. Recessed downlights with compact fluorescent lamps are located in the lobby. Incandescent lamps are used in replica pendants and wall sconces to match the original grand staircase.

Luminaire Table

	Lamp				Ballast					
Tag	Source	Type	Watts	Number	Type	Voltage	Input Watts	Ballast Factor	Current @ Start/ Operating	Power Factor @ Start/ Operating
CF1	FLOUR	F32T8/835/ALTO	32	2	Electronic	120	56	0.88	0.80 A	0.50
CF3	FLOUR	F32T8/835/ALTO	32	2	Electronic	120	56	0.88	0.80 A	0.50
CF4	FLOUR	F32T8/835/ALTO	32	2	Electronic	120	56	0.88	0.80 A	0.50
48P2	FLOUR	F32T8/835/ALTO	32	2	Electronic	120	56	0.88	0.80 A	0.50
CA	INCAN	A19 100W MED	100	1	-	-	-	-	0.83 A	1.00
CB	INCAN	A19 100W MED	100	1	-	-	-	-	0.83 A	1.00
CR1	FLOUR	PL-T 42W/835/4P	42	1	Electronic	120	46	0.98	0.38	0.98
CR2	FLOUR	PL-T 26W/835/4p	26	2	Electronic	120	26	0.96	0.38	0.57

Lighting Controls

Lighting within the Corbin Building makes use of different control systems. In the open offices the linear fluorescent pendants are controlled with occupancy sensors. The copy rooms and storage areas use a typical switch to turn on and off the lights in those areas. The lights in the lobby are not switched because the New York City Electrical Code requires the lobby of the subway entrance to always be on for safety.

Mechanical and Other Loads

The Corbin Building consists of mechanical, plumbing, and architectural equipment loads. The hot water pumps are connected to VFDs that operates at 460V, 3PH, 3W. The seven 10HP each air handling units are connected to 460V, 3PH, 3W. Other mechanical loads are connected with 208V, 1PH or 3PH and some of the fans are connect with 120V, 1PH. The 10HP elevator motors and 40HP escalator motors are connected to 460V, 3PH, 3W. These loads are described in the tables below.

Mechanical Equipment Table									
Load				Characteristics					
Tag	Description	Magnitude	Units	NEC Motor Amps	Voltage	Phase(s)	PF	kVA	kW
AHU-C2-1	AHU- Supply Lvl 2	10	HP	14	460	3	0.95	11.2	10.6
AHU-C3-1	AHU- Supply Lvl 3	10	HP	14	460	3	0.95	11.2	10.6
AHU-C4-1	AHU- Supply Lvl 4	10	HP	14	460	3	0.95	11.2	10.6
AHU-C5-1	AHU- Supply Lvl 5	10	HP	14	460	3	0.95	11.2	10.6
AHU-C6-1	AHU- Supply Lvl 6	10	HP	14	460	3	0.95	11.2	10.6
AHU-C7-1	AHU- Supply Lvl 7	10	HP	14	460	3	0.95	11.2	10.6
AHU-C8-1	AHU- Supply Lvl 8	10	HP	14	460	3	0.95	11.2	10.6
FAI-C-1	Fresh Air Iintake Fan	15	HP	21	460	3	0.95	16.7	15.9
EF-C-1	Exhaust Fan	5	HP	7.6	460	3	0.95	6.1	5.8
EF-C-2	Exhaust Fan	3	HP	4.8	460	3	0.85	3.8	3.3
EF-C-3	Exhaust Fan	1/3	HP	7.2	120	1	0.75	0.9	0.6
EF-C-4	Exhaust Fan	1/4	HP	5.8	120	1	0.75	0.7	0.5
EF-C-5	Exhaust Fan	1	HP	2.1	460	3	0.85	1.7	1.4
EF-C-8	Exhaust Fan	1/4	HP	5.8	120	1	0.75	0.7	0.5
EF-C-9	Exhaust Fan	1/6	HP	4.4	120	1	0.75	0.5	0.4
EF-C-10	Exhaust Fan	1/4	HP	5.8	120	1	0.75	0.7	0.5
EF-C-11	Exhaust Fan	1/6	HP	4.4	120	1	0.75	0.5	0.4
CAC-C-1	Computer Air Condition Unit	8.6	kVA	-	277	1	1.00	8.6	8.6
CAC-C-2	Computer Air Condition Unit	8.6	kVA	-	277	1	1.00	8.6	8.6
CAC-C-3	Computer Air Condition Unit	8.6	kVA	-	277	1	1.00	8.6	8.6
CAC-C-4	Computer Air Condition Unit	8.6	kVA	-	277	1	1.00	8.6	8.6
SF-C-1	Supply Fan	1/3	HP	7.2	120	1	0.75	0.9	0.6
SF-C-2	Supply Fan	1/4	HP	5.8	120	1	0.75	0.7	0.5
SF-C-3	Supply Fan	1/3	HP	7.2	120	1	0.75	0.9	0.6
SF-C-4	Supply Fan	1/4	HP	5.8	120	1	0.75	0.7	0.5
UH-C-1	Unit Heater	4000	W	-	208	3	1.00	4.0	4.0
UH-C-2	Unit Heater	5000	W	-	208	3	1.00	5.0	5.0
UH-C-3	Unit Heater	2000	W	-	208	1	1.00	2.0	2.0
UH-C-4	Unit Heater	2100	W	-	208	1	1.00	2.1	2.1
UH-C-5	Unit Heater	1400	W	-	208	1	1.00	1.4	1.4
HV-C-1	Heating Ventilating Unit	3/4	HP	1.6	460	3	0.85	1.3	1.1
HV-C-2	Heating Ventilating Unit	3/4	HP	1.6	460	3	0.85	1.3	1.1
FCU-C-1	Fan Coil Unit	1/12	HP	-	208	1	0.75		0.0
FCU-C-2	Fan Coil Unit	1/8	HP	-	208	1	0.75		0.0
FCU-C-3	Fan Coil Unit	1/3	HP	4	208	1	0.75	0.8	0.6
FCU-C-4	Fan Coil Unit	1/3	HP	4	208	1	0.75	0.8	0.6
FCU-C-5	Fan Coil Unit	1/3	HP	7.2	120	1	0.75	0.9	0.6
FCU-C-6	Fan Coil Unit	1/3	HP	7.2	120	1	0.75	0.9	0.6
FCU-C-7	Fan Coil Unit	4/5	HP	7.8	208	1	0.85	1.6	1.4
Total								170.0	160.9

Plumbing Equipment Table									
Load				Characteristics					
Tag	Description	Magnitude	Units	NEC Motor Amps	Voltage	Phase(s)	PF	kVA	kW
HWP-C-1	Hot Water Pump	25	HP	34	460	3	0.95	27.1	25.7
HWP-C-2	Hot Water Pump	25	HP	34	460	3	0.95	27.1	25.7
CR-C1	CP-C1, CP-C2	1/3	HP	7.2	120	1	0.75	0.9	0.6
CR-C2	CP-C3, CP-C4	1	HP	2.1	460	3	0.85	1.7	1.4
SP-C1	Pumps	5	HP	7.6	460	3	0.95	6.1	5.8
SP-C2	Pumps	1/3	HP	7.2	120	1	0.75	0.9	0.6
SP-C2	Pumps	1/3	HP	7.2	120	1	0.75	0.9	0.6
SP-C3	Pumps	1/2	HP	9.8	120	1	0.75	1.2	0.9
P-C1	Pumps	10	HP	14	460	3	0.95	11.2	10.6
P-C1	Pumps	10	HP	14	460	3	0.95	11.2	10.6
P-C2	Pumps	1/6	HP	4.4	120	1	0.75	0.5	0.4
Total								88.5	83.1

Architectural Equipment Table									
Load				Characteristics					
Tag	Description	Magnitude	Units	NEC Motor Amps	Voltage	Phase(s)	PF	kVA	kW
PE-54	Elevator	10	HP	14	460	3	0.95	11.2	10.6
PE-55	Elevator	10	HP	14	460	3	0.95	11.2	10.6
E-57	Escalator	40	HP	52	460	3	0.95	41.4	39.4
E-58	Escalator	40	HP	52	460	3	0.95	41.4	39.4
Total								105.17	99.91

Service Entrance Size

The following tables summarize three different methods to calculate the size of the service entrance. The square foot method is used during the conceptual and schematic design phase to provide a rough estimate of the service entrance based on a specific building type (office) and the square footage of the building. The second method during design development stages involves using the NEC demand loading tables to calculate the service entrance. This method uses specific categories and a VA/Sq Ft estimate. The last method used is the actual loading from the building loads. The loads used are from the working drawings and have demand factors from the NEC. Each method is broking down for each service entrance calculation below.

Service Entrance Size Conceptual/ Schematic Phase			
Building Type	Area (Sq. Ft.)	VA/Sq. Ft.	VA
Office	53000	16	848000
		Total kVA:	848
		Total Amps at 460V:	1064
		Service Entrance Size:	1200A

Service Entrance Size | Design Development Phase			
Load Type	Area (Sq. Ft.)	VA/Sq. Ft.	kVA
Lighting	53000	3.5	185.5
Receptacles	53000	1	10
Receptacles		0.5	21.5
HVAC |Fans	53000	2	106
HVA| Cooling	53000	8	424
Elevators	2 Each	50 kW per	100
Escalators	2 Each	25 kW per	50
		Total kVA:	897
		Total Amps at 460V:	1126
		Service Entrance Size:	1200A

Service Entrance Size | Construction Development Phase			
Load Type	Connected Load (kVA)	Demand Factor	Demand Load (kVA)
Lighting	45.9	1	45.9
Receptacles	139.5	1	10.0
		0.5	64.8
Mechanical Cooling	112.5	1	112.5
Fans	40.4	0.8	32.3
Heating	17	1	17.0
Pumps	88.5	0.8	70.8
Elevators	22.4	1	22.4
Escalators	82.8	1	82.8
		Total kVA:	458.5
		Total kVA Plus 25% Spare Capacity:	573.1
		Total Amps at 460V:	719.3
		Service Entrance Size:	1200A

Service Entrance Size Summary			
Table 1			
Phase	Connected Load (kVA)	Voltage System	Load- Amps
Schematic	848	460/265V	1064.3
Design Development	897	460/265V	1125.8
Construction Documents	573	460/265V	719.3
Table 2			
Phase	Capacity- (kVA)	Voltage System	Load- Amps
Actual Conditions	956	460/265V	1200
Summary VA/ Sq. Ft.		10.8 VA/ Sq. Ft.	

Comparing the service entrance size methods, each phase narrowed closer to the actual load of the building. The schematic and design development were over estimated since the building spaces contain a floor of retail and lobby spaces. The working drawings load calculations most closely resembled the actual service entrance size for the building. There is room for expansions since the retail stores have not been fitted out with lighting and receptacle loads which is not included in the actual conditions. Many of the panelboards contain spare circuits for the possibility of adding loads in the future.

Environmental Stewardship Design

Renovating the Corbin Building to its original look and feel of 1910-1917 eras there is no new sustainable designs being implemented in this building. The owner is installing energy efficient lighting and upgrading the existing transformers and mechanical equipment in more energy efficient equipment to conserve energy.

Design Issues

The Corbin Building is a renovation project but the whole electrical distribution system is brand-new. The connection to the FSTC building service on the fifth floor created the problem of running the utility through the building to the basement. The main electrical distribution is located in the basement because the existing structure was not designed for the heavy electrical equipment to be located on the fifth floor.

Single-Line Diagram

The single-line diagram is shown on Appendix A.

Section 2: Communication Systems

The Corbin Building has many types of telecommunications systems. There are two main communication closets for the building on floors two and six. Each floor has a pull box in the copy room

adjacent to the vertical shaft. The communication systems include fiber optics for voice and data, security, fire alarm and a public address system.

Telecommunication System

Fiber optic cables are routed from the FSTC to the Corbin Building communication rooms on floors two and six and then distributed to the rest of the building from those locations. Verizon provides a fiber optic service for the Corbin Buildings telephone system. The telephone system has a typical layout on floors two through eight with ports for phones and data in the floor along the south wall.

Security System

The security cameras are located on the street and also in the communication closest and security offices. Also there is an access control system on security office doors and communication closets which include magnetic door locks and card readers. The Corbin Entry which is used to access floors two through nine have key card accesses and cameras in the lobby and elevators.

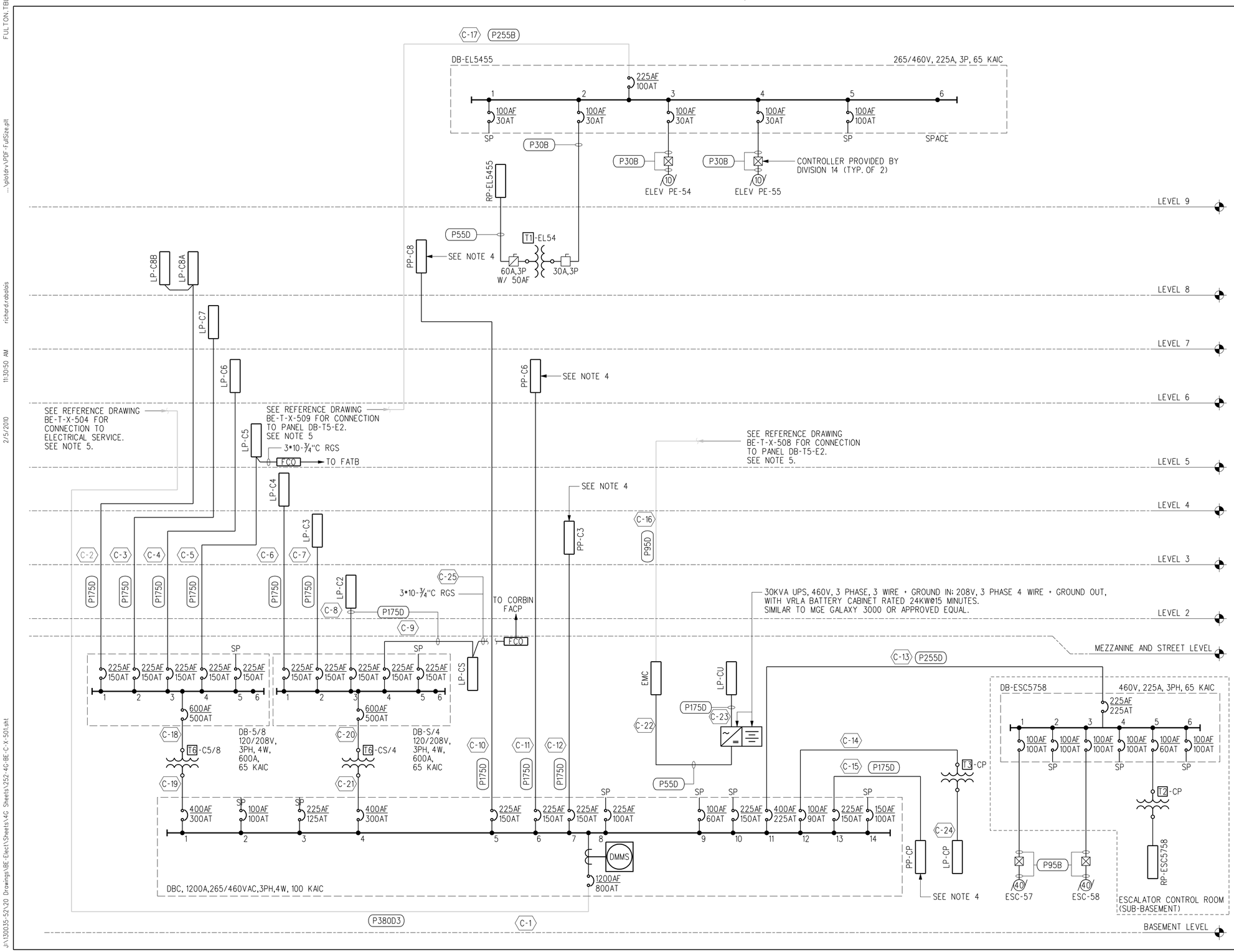
Fire Alarm System

The fire alarm system is feed from panelboard LP-CP to a fire alarm control panel. There are pull stations located by all the doors. The Fire alarm control panel is located in the stairwell of the Corbin Entry. Horns and strobe lights are also located throughout the building. There is a public address system attached to the fire alarm control panel in the Fulton Street Transit Center lobby to address riders of the subway encase of an emergency.

Appendix A: Single Line

Arup Drawing Number: 4G-BE-C-X-501

Trethaway Drawing Number: Sheet 1 of 1



NOTES:

1. REFER TO DWG BE-0-X-801 FOR TRANSFORMER WIRING AND WIRING SCHEDULES.
2. PROVIDE CONDUIT AND WIRING FOR TRANSFORMER NEUTRALGROUND CONDUCTOR, AS PER DWG BE-0-X-801. THECONDUCTOR SHALL BE CONNECTED TO BUILDING STEEL IN THE ELECTRICAL ROOM.
3. FOR TRANSFORMER TYPE RATING, SEE DWG BE-0-X-801. TRANSFORMER T6-C5/8 ON THIS DWG INDICATES TRANSFORMER TYPE T6, SERVING CORBIN FLOORS 5 TO 8.
4. SEE DWG BE-C-X-807 FOR MECHANICAL EQUIPMENT WIRING.
5. ——— INDICATES FEEDERS NOT PROVIDED BY THIS CONTRACT. THIS CONTRACT TO PROVIDE CONNECTED EQUIPMENT WITH LUGS TO MATCH THE FEEDERS REQUIRED. ALSO SEE PLANS FOR EXTENT OF CONDUIT WORK TO BE DONE BY THIS CONTRACT.

REVISION	DESCRIPTION	DATE	APPROVED
0	CONFORMED DRAWINGS	02-05-10	CC

KEY PLAN:

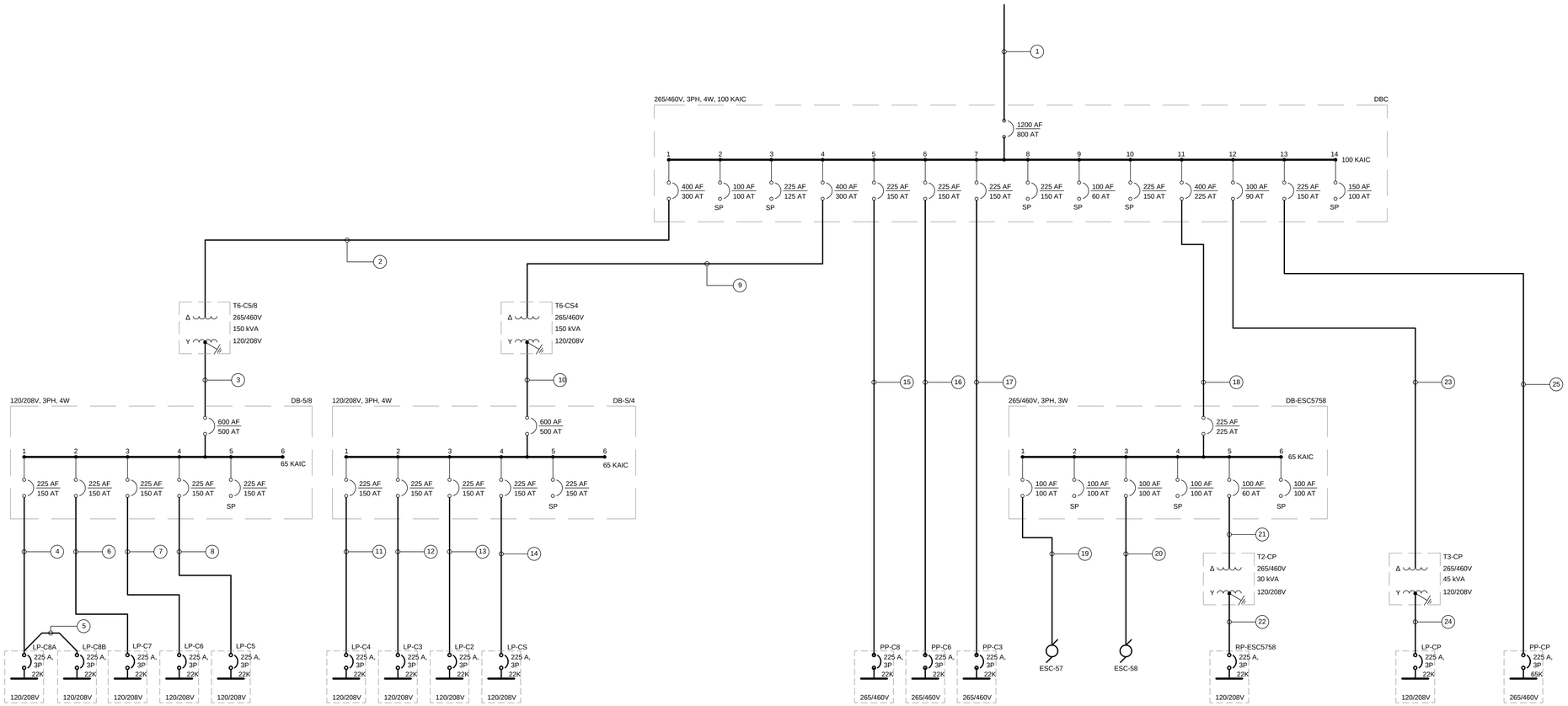
Fulton Street Transit Center
ARUP

MTA
New York City Transit
Capital Construction

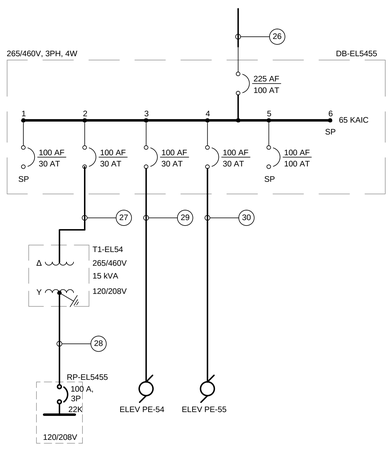
CONTRACT A-36126
HISTORICAL BUILDING RESTORATION

DRAWING TITLE:
BUILDING ELECTRICAL
ONE LINE DIAGRAM
CORBIN BUILDING
SHEET 1

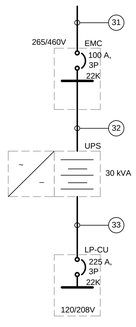
DRAWN: RRR		DESIGNED: JR	
CHECKED: HL		APPROVED: HL	
SCALE: NTS	DATE: 09-11-09	SHT: 2-147	
DRAWING NO: 4G–BE–C–X–501		REVISION: 0	



BUILDING SINGLE-LINE DIAGRAM



ELEVATOR SINGLE-LINE DIAGRAM



EMERGENCY SINGLE-LINE DIAGRAM

FEEDER SCHEDULE

TAG	FROM	TO	NO. OF SETS	CONDUIT (PER SET) SIZE	CONDUIT (PER SET) TYPE	CONDUCTORS (PER SET) PHASE CONDUCTORS No.	PHASE CONDUCTORS SIZE	PHASE CONDUCTORS TYPE	NEUTRAL CONDUCTORS No.	NEUTRAL CONDUCTORS SIZE	NEUTRAL CONDUCTORS TYPE	GROUND CONDUCTORS No.	GROUND CONDUCTORS SIZE	GROUND CONDUCTORS TYPE	SIZE OF OVERCURRENT PROTECTION	FRAME OR SWITCH SIZE	REMARKS
1	FSTC	DBC	3	4	RGS	3	500	THHN	1	500	THHN	1	250	THHN	800	1200	
2	DBC	T6-C5/8	1	4	RGS	3	500	THHN	1	500	THHN	-	-		300	400	
3	T6-C5/8	DB-5/8	2	4	RGS	3	250	THHN	1	250	THHN	1	2	THHN	500	600	
4	DB-5/8	LP-C8A	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
5	DB-5/8	LP-C8B	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
6	DB-5/8	LP-C7	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
7	DB-5/8	LP-C6	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
8	DB-5/8	LP-C5	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
9	DBC	T6-CS/4	1	4	RGS	3	500	THHN	1	500	THHN	-	-	-	300	400	
10	T6-CS/4	DB-S/4	2	4	RGS	3	250	THHN	1	250	THHN	1	2	THHN	500	600	
11	DB-S/4	LP-C4	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
12	DB-S/4	LP-C3	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
13	DB-S/4	LP-C2	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
14	DB-S/4	LP-CS	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
15	DBC	PP-C8	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
16	DBC	PP-C6	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
17	DBC	PP-C3	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
18	DBC	DB-ESC5758	1	4	RGS	3	250	THHN	1	250	THHN	-	-	-	225	400	
19	DB-ESC5758	ESC-57	1	1-1/2	RGS	3	2	THHN	-	-	-	1	6	THHN	100	100	
20	DB-ESC5758	ESC-58	1	1-1/2	RGS	3	2	THHN	-	-	-	1	6	THHN	100	100	
21	DB-ESC5758	T2-CP	1	1-1/2	RGS	3	6	THHN	-	-	-	1	8	THHN	60	100	
22	T2-CP	RP-ESC5758	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	100	225	
23	DBC	T3-CP	1	1-1/2	RGS	3	2	THHN	-	-	-	1	6	THHN	90	100	
24	T3-CP	LP-CP	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
25	DBC	PP-CP	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
26	FSTC	DB-EL5455	1	2-1/2	RGS	3	250	THHN	-	-	-	1	2	THHN	100	225	
27	DB-EL5455	T1-EL54	1	3/4	RGS	3	10	THHN	-	-	-	1	10	THHN	30	100	
28	T1-EL54	RP-EL5455	1	1-1/2	RGS	3	4	THHN	1	6	THHN	1	8	THHN	50	100	
29	DB-EL5455	ELEVPE-54	1	3/4	RGS	3	10	THHN	-	-	-	1	10	THHN	30	100	
30	DB-EL5455	ELEVPE-55	1	3/4	RGS	3	10	THHN	-	-	-	1	10	THHN	30	100	
31	FSTC	EMC	1	1-1/2	RGS	3	2	THHN	1	2	THHN	1	6	THHN	100	100	
32	EMC	UPS	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	150	225	
33	UPS	LP-CU	1	2	RGS	3	2/0	THHN	1	2/0	THHN	1	2	THHN	225	225	

NOTES:
1. REFER TO SINGLE-LINE DIAGRAM FOR FEEDER TAGS

AL=ALUMINUM
CU=COPPER

Designed MATT TRETHAWAY
Date 10-3-2011
Checked

CORBIN BUILDING
MTA
192 BROADWAY NEW YORK, NY

ELECTRICAL SINGLE-LINE DIAGRAM
AE 466 PROJECT 1

Approved ____ Date ____
Title ____ Job Class ____

REVISIONS
Date | Description | Approved

SCALE: 1:1

Sheet 1 of 1

Appendix B: Fluorescent Lamps/ Ballast Combinations

Type CF1:

Lamp: F32T8 Fluorescent

Ballast: Electronic

Type CR1:

Lamp: PL-T 42W Fluorescent

Ballast: Electronic

2011, September 21
data subject to change

Extra low mercury

T8 Standard

Philips T8 lamps offer high energy savings, superior lumen output, and long life in an environmentally responsible lamp.

Benefits

- Sustainable lighting solution - Reduced impact on the environment without sacrificing performance.
- Warranty period: 30 months.

Features

- Reduce maintenance costs by extending the relamping cycle.
- Outstanding lumen performance - 95% lumen maintenance.
- Better for the environment - only 1.7mg of mercury per lamp with ALTO II Technology.
- Available in 17, 25 and 32 watt with 3000, 3500, 4100 & 5000 Color Temperatures.

Application

- Ideal for applications requiring maximum maintained light output.

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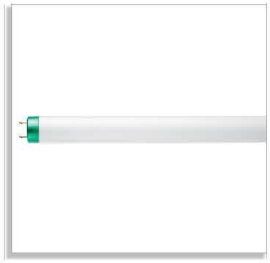
T8 Standard 2

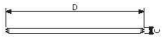
Related products



G13, T8

Dimensional drawing

G13, T8



Compare table

Order code	Full product name	Bulb	Base	Color Code	Color Designation	Energy Used	Lumens (Brightness)	Color Rendering Index	Color Temperature	Design Mean Lumens	Mercury (Hg) Content
-	-	T8	Medium Bi-Pin	54	Daylight	32	-	79	6500	-	16
927850083501	F17T8 TL835 ALTO	T8	Medium Bi-Pin	TL835	TL835	17	1375	85	3500	1310	1.7
927850084101	F17T8 TL841 ALTO	T8	Medium Bi-Pin	TL841	TL841	17	1375	85	4100	1310	1.7
927850085001	F17T8 TL850 ALTO	T8	Medium Bi-Pin	TL850	TL850	17	1300	82	5000	1235	1.7
927851083501	F25T8 TL835 ALTO	T8	Medium Bi-Pin	TL835	TL835	25	2150	85	3500	2045	1.7
927851084101	F25T8 TL841 ALTO	T8	Medium Bi-Pin	TL841	TL841	25	2150	85	4100	2045	1.7
927851085001	F25T8 TL850 ALTO	T8	Medium Bi-Pin	TL850	TL850	25	2100	82	5000	1995	1.7
927869773001	F32T8 TL730 ALTO	T8	Medium Bi-Pin	TL730	TL730	32	2800	78	3000	2470	1.7
927869773501	F32T8 TL735 ALTO	T8	Medium Bi-Pin	TL735	TL735	32	2800	78	3500	2470	1.7
927869773502	F32T8/TL735 UNP	T8	Medium Bi-Pin	TL735	TL735	32	2800	78	3500	2470	1.7
-	-	T8	Medium Bi-Pin	TL735	TL735	32	2800	78	3500	2470	1.7
927869774101	F32T8 TL741 ALTO	T8	Medium Bi-Pin	TL741	TL741	32	2800	78	4100	2470	1.7
927869774103	F32T8 TL741 ALTO	T8	Medium Bi-Pin	TL741	TL741	32	2800	78	4100	2470	1.7
927869774105	F32T8 Cool White Plus 2WR	T8	Medium Bi-Pin	TL741	TL741	32	2800	78	4100	2470	1.7
927869774109	F32T8 TL741 ALTO 2OW	T8	Medium Bi-Pin	TL741	TL741	32	2800	78	4100	2470	1.7
-	-	T8	Medium Bi-Pin	TL741	TL741	32	2800	78	4100	2470	1.7
927869775001	F32T8 TL750 ALTO	T8	Medium Bi-Pin	TL750	TL750	32	2700	78	5000	2375	1.7
927869783001	F32T8 TL830 ALTO	T8	Medium Bi-Pin	TL830	TL830	32	2950	85	3000	2710	1.7
927869783005	F32T8 TL830 ALTO 2SR	T8	Medium Bi-Pin	TL830	TL830	32	2950	85	3000	2710	1.7
927869783501	F32T8 TL835 ALTO	T8	Medium Bi-Pin	TL835	TL835	32	2950	85	3500	2710	1.7
927869784101	F32T8 TL841 ALTO	T8	Medium Bi-Pin	TL841	TL841	32	2950	85	4100	2710	1.7
927869784102	F32T8/TL841 ALTO	T8	Medium Bi-Pin	TL841	TL841	32	2950	85	4100	2710	1.7

2011, September 21
data subject to change

T8 Standard 3

Order code	Full product name	Bulb	Base	Color Code	Color Designation	Energy Used	Lumens (Brightness)	Color Rendering Index	Color Temperature	Design Mean Lumens	Mercury (Hg) Content
927869785001	F32T8 TL850 ALTO	T8	Medium Bi-Pin	TL850	TL850	32	2850	82	5000	2710	1.7
-	-	T8	Medium Bi-Pin	TL850	TL850	32	2850	82	5000	2710	1.7
927870073021	F32T8/TL735 ALTO 1LP	T8	Medium Bi-Pin	TL735	TL735	32	2800	78	3500	2470	1.7
927870073529	F32T8/TL735 ALTO 1LP	T8	Medium Bi-Pin	TL735	TL735	32	2800	78	3500	2470	1.7
-	-	T8	Medium Bi-Pin	TL741	TL741	32	2800	78	4100	2470	1.7

Compare table

Order code	Full product name	Energy Saving	Footnotes Fluorescent/ CFL	Rated Avg Life [12-Hr Prog St]	Rated Avg Life [12-Hr Inst St]	Rated Avg Life [3-Hr Prog St]	Rated Avg Life [3-Hr Inst St]	Picogram per Lumen Hour	Life with 3h/day use [years]
-	-	Not Applicable	-	-	-	-	-	-	-
927850083501	F17T8 TL835 ALTO	Energy Saving	-	36000	30000	30000	24000	54	-
927850084101	F17T8 TL841 ALTO	Energy Saving	-	36000	30000	30000	24000	54	-
927850085001	F17T8 TL850 ALTO	Energy Saving	-	36000	30000	30000	24000	54	-
927851083501	F25T8 TL835 ALTO	Energy Saving	-	36000	30000	30000	24000	35	-
927851084101	F25T8 TL841 ALTO	Energy Saving	-	36000	30000	30000	24000	35	-
927851085001	F25T8 TL850 ALTO	Energy Saving	-	36000	30000	30000	24000	36	-
927869773001	F32T8 TL730 ALTO	Energy Saving	920	36000	30000	30000	24000	27	-
927869773501	F32T8 TL735 ALTO	Energy Saving	920	36000	30000	30000	24000	27	-
927869773502	F32T8/TL735 UNP	Energy Saving	920	36000	30000	30000	24000	27	-
-	-	Energy Saving	-	36000	30000	30000	24000	27	-
927869774101	F32T8 TL741 ALTO	Energy Saving	920	36000	30000	30000	24000	27	-
927869774103	F32T8 TL741 ALTO	Energy Saving	920	36000	30000	30000	24000	27	-
927869774105	F32T8 Cool White Plus 2WR	Energy Saving	903	36000	30000	30000	24000	-	7
927869774109	F32T8 TL741 ALTO 2OW	Energy Saving	920	36000	30000	30000	24000	27	-
-	-	Energy Saving	-	36000	30000	30000	24000	27	-
927869775001	F32T8 TL750 ALTO	Energy Saving	920	36000	30000	30000	24000	28	-
927869783001	F32T8 TL830 ALTO	Energy Saving	920	36000	30000	30000	24000	25	-
927869783005	F32T8 TL830 ALTO 2SR	Energy Saving	920	36000	30000	30000	24000	25	-
927869783501	F32T8 TL835 ALTO	Energy Saving	920	36000	30000	30000	24000	25	-
927869784101	F32T8 TL841 ALTO	Energy Saving	920	36000	30000	30000	24000	25	-
927869784102	F32T8/TL841 ALTO	Energy Saving	920	36000	30000	30000	24000	25	-
927869785001	F32T8 TL850 ALTO	Energy Saving	920	36000	30000	30000	24000	26	-
-	-	Energy Saving	-	36000	30000	30000	24000	26	-
927870073021	F32T8/TL735 ALTO 1LP	Energy Saving	920	36000	30000	30000	24000	-	-
927870073529	F32T8/TL735 ALTO 1LP	Energy Saving	920	36000	30000	30000	24000	-	-
-	-	Energy Saving	-	36000	30000	30000	24000	-	7

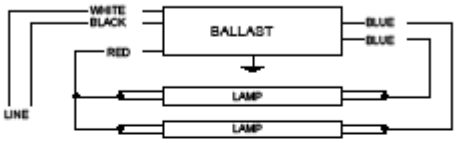
PHILIPS
ADVANCE

REB-2P32-SC	
Brand Name	AMBISTAR
Ballast Type	Electronic
Starting Method	Instant Start
Lamp Connection	Parallel
Input Voltage	120
Input Frequency	60 HZ
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
F17T8	1	17	0/-18	0.30	19	1.02	150	0.50	1.7	5.37
F17T8	2	17	0/-18	0.45	31	0.91	140	0.50	1.7	2.94
F25T8	1	25	0/-18	0.39	26	1.00	150	0.50	1.7	3.85
F25T8	2	25	0/-18	0.61	43	0.89	130	0.50	1.7	2.07
F32T8	1	32	0/-18	0.48	33	1.00	140	0.50	1.7	3.03
* F32T8	2	32	0/-18	0.80	56	0.88	120	0.50	1.7	1.57

Wiring Diagram



Diag. 64

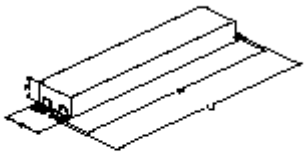
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	In.	cm.
Black	25	63.5
White	25	63.5
Blue	31	78.7
Red	37	94
Yellow		0
Gray		0
Violet		0

	In.	cm.
Yellow/Blue		0
Blue/White		0
Brown		0
Orange		0
Orange/Black		0
Black/White		0
Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
9.50 "	1.7 "	1.18 "	8.90 "
9 1/2	1 7/10	1 9/50	8 9/10
24.1 cm	4.3 cm	3 cm	22.6 cm

Revised 09/11/2007

Data is based upon tests performed by Philips Lighting Electronics N.A. 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. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.
10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance
Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886

2011, September 8
data subject to change

Low mercury, energy savings.

PL-T Triple 4-Pin Base

Philips Linear Compact Fluorescent Lamps offer designers, specifiers and end-users new levels of efficiencies and versatility in sizes,configurations and application possibilities. With so many elegant fixtures available to complement their small size, high light output and advanced technology, Philips Energy Advantage lamps are fast becoming the preferred choice when maximum effciency and sleek design solutions are required.

Benefits

- Extend your relamp cycles and reduce your maintenance costs with 12,000 hours rated average life (3 hrs per start) and 20,000 hours rated average life (12 hrs per start).
- Better for the environment - only 1.4 mg of mercury per lamp.
- More design flexibility - 25% shorter than PL-C lamps.

Features

- Temperature-independent lamp
- Extended relamping cycles
- Dimmable for application flexibility and energy savings
- More design flexibility
- Better for the environment
- Available in 18,26,32,42, and 57 watts with 2700,3000,3500,and 4100 color temperatures

Application

- Ideal for downlights in offices, hotels and retail environments

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PL-T Triple 4-Pin Base 2

Related products

18W, GX24q-2, 4P

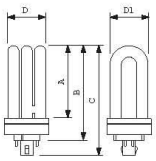
26W, GX24q-3, 4P

32W, GX24q-3, 4P

42W, GX24q-4, 4P

57W, GX24q-5, 4P

Dimensional drawing



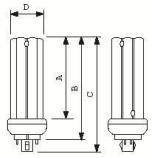
GX24q-2/GX24q-3/GX24q-4, 4P

Product	A (Max)	B (Max)	C (Max)	D (Max)	D1 (Max)
PL-T 26W/827/4P	102	126.5	141.4	39.85	39.65
PL-T 18W/827/4P	77	101.5	116.4	39.85	39.65
PL-T 18W/830/4P	77	101.5	116.4	39.85	39.65
PL-T 18W/840/4P	77	101.5	116.4	39.85	39.65
PL-T 18W/835/4P	77	101.5	116.4	39.85	39.65
PL-T 26W/827/4P	87	111.5	126.4	39.85	39.65
PL-T 26W/830/4P	87	111.5	126.4	39.85	39.65
PL-T 26W/840/4P	87	111.5	126.4	39.85	39.65
PL-T 26W/835/4P	87	111.5	126.4	39.85	39.65
PL-T 32W/827/4P	102	126.5	141.4	39.85	39.65
PL-T 32W/830/4P	102	126.5	141.4	39.85	39.65
PL-T 32W/840/4P	102	126.5	141.4	39.85	39.65
PL-T 32W/835/4P	102	126.5	141.4	39.85	39.65
PL-T 42W/827/4P	119	143.5	158.4	39.85	39.65

2011, September 8
data subject to change

PL-T Triple 4-Pin Base 3

Dimensional drawing



PL-T 42W/830/4P	119	143.5	158.4	39.85	39.65
PL-T 42W/840/4P	119	143.5	158.4	39.85	39.65
PL-T 42W/835/4P	119	143.5	158.4	39.85	39.65

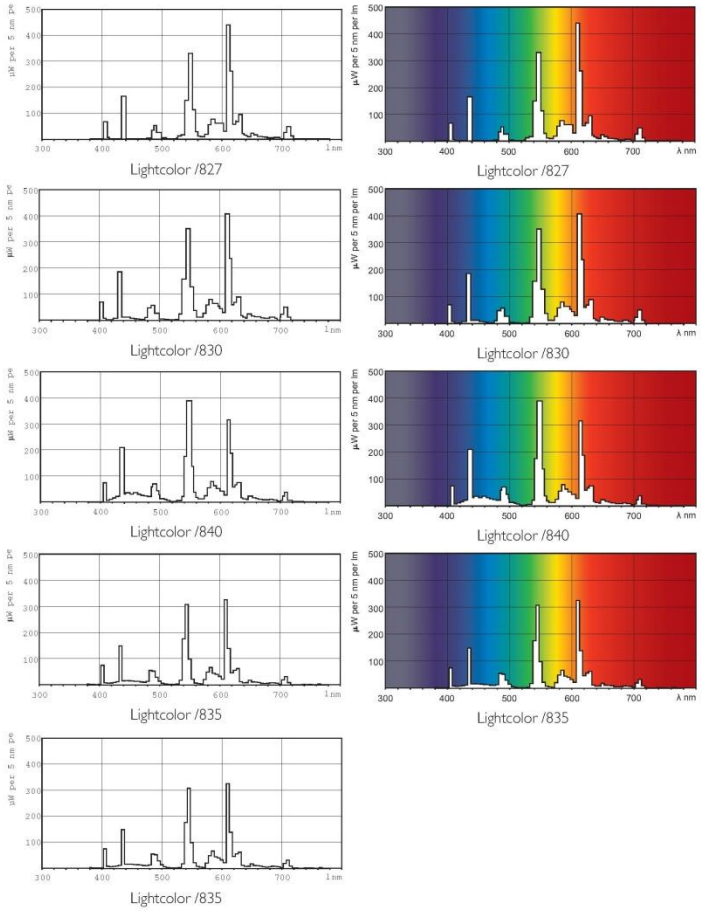
GX24q-5, 4P

Product	A (Max)	B (Max)	C (Max)	D (Max)
PL-T ALTO 57W/835/4P A	157.7	182.0	197.7	41
PL-T ALTO 57W/841/4P A	157.7	182.0	197.7	41

2011, September 8
data subject to change

PL-T Triple 4-Pin Base 4

Photometric data



Compare table

Order code	Full product name	Base	Color Code	Color Designation	Energy Used	Lamp Wattage EM	Lamp Wattage EL	Lamp Current	Initial Lumens	Initial Lumens	Lamp Voltage
927910608213	PL-T 18W/827/4P 1CT	GX24q-2	827	Incandescent White	18	18.0	16.5	0.220	1200	1200	100
927910608313	PL-T 18W/830 /4PALTO 1CT	GX24q-2	830	Warm White	18	18	16.5	0.220	1200	1200	100
927910608413	PL-T 18W/841/4P 1CT	GX24q-2	841	Cool White	18	18.0	16.5	0.220	1200	1200	100
927910683513	PL-T 18W/835 GX24q-2 / 4P 1CT	GX24q-2	835	White	18	18	16.5	0.220	1200	1130	100
927899282702	PL-T 26W/827/4P 18C	GX24q-3	827	Incandescent White	26	-	26	-	-	2000	-
927911608213	PL-T 26W/827/4P 1CT	GX24q-3	827	Incandescent White	26	26.0	24.0	0.325	1800	1800	105
927911608313	PL-T 26W/830/4P 1CT	GX24q-3	830	Warm White	26	26.0	24.0	0.325	1800	1800	105
927911608413	PL-T 26W/841/4P 1CT	GX24q-3	841	Cool White	26	26.0	24.0	0.325	1800	1800	105

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PL-T Triple 4-Pin Base 5

Order code	Full product name	Base	Color Code	Color Designation	Energy Used	Lamp Wattage EM	Lamp Wattage EL	Lamp Current	Initial Lumens	Initial Lumens	Lamp Voltage
927911683513	PL-T 26W/835/4P ALTO 1CT	GX24q-3	835	White	26	26	24.0	0.300	1800	1800	80
927911808213	PL-T 32W/827/4P 1CT	GX24q-3	827	Incandescent White	32	-	32.0	-	-	2400	-
927911808313	PL-T 32W/830/4P 1CT	GX24q-3	830	Warm White	32	-	32.0	-	-	2400	-
927911808413	PL-T 32W/841/4P 1CT	GX24q-3	841	Cool White	32	-	32.0	-	-	2400	-
927911883513	PL-T 32W/835/4P 1CT	GX24q-3	835	White	32	-	29.0	-	-	2400	-
927912108213	PL-T 42W/827/4P 1CT	GX24q-4	827	Incandescent White	42	-	43.0	-	-	3200	-
927912108313	PL-T 42W/830/4P 1CT	GX24q-4	830	Warm White	42	-	43.0	-	-	3200	-
927912108413	PL-T 42W/841/4P 1CT	GX24q-4	841	Cool White	42	-	43.0	-	-	3200	-
927912183513	PL-T 42W/835/4P 1CT	GX24q-4	835	White	42	-	43.0	-	-	3200	-
927914083520	PL-T ALTO 57W/835/4P A 1CT	GX24q-5	835	White	57	-	-	-	-	-	-
927914084020	PL-T ALTO 57W/841/4P A 1CT	GX24q-5	841	Cool White	57	-	-	-	-	-	-

Compare table

Order code	Full product name	Lamp Current EL	Dimmable	Energy Efficiency Label (EEL)	Chromaticity Coordinate X	Chromaticity Coordinate Y	Color Rendering Index	RatedAvgLife(See Family Notes)	Avg. Hrs. Life	Lumen Maintenance 2000h	Lumen Maintenance 5000h
927910608213	PL-T 18W/827/4P 1CT	0.210	Yes	B	455	417	82	8000	16000	90	81
927910608313	PL-T 18W/830 / 4PALTO 1CT	0.210	Yes	B	438	394	82	8000	16000	90	81
927910608413	PL-T 18W/841/4P 1CT	0.210	Yes	B	380	379	82	8000	16000	90	81
927910683513	PL-T 18W/835 GX24q-2 /4P 1CT	0.210	Yes	B	411	398	82	8000	16000	90	86
927899282702	PL-T 26W/827/4P 1BC	0.305	-	-	450	416	82	-	-	-	-
927911608213	PL-T 26W/827/4P 1CT	0.300	Yes	B	455	417	82	8000	16000	90	81
927911608313	PL-T 26W/830/4P 1CT	0.300	Yes	B	440	403	82	8000	16000	90	81
927911608413	PL-T 26W/841/4P 1CT	0.300	Yes	B	380	379	82	8000	16000	90	81
927911683513	PL-T 26W/835/4P ALTO 1CT	0.300	Yes	B	411	398	82	8000	16000	90	86
927911808213	PL-T 32W/827/4P 1CT	0.320	Yes	B	455	417	82	-	16000	-	-
927911808313	PL-T 32W/830/4P 1CT	0.320	Yes	B	434	397	82	-	16000	-	-
927911808413	PL-T 32W/841/4P 1CT	0.320	Yes	B	380	379	82	-	16000	-	-
927911883513	PL-T 32W/835/4P 1CT	0.320	Yes	B	411	398	82	-	16000	90	-
927912108213	PL-T 42W/827/4P 1CT	0.320	Yes	B	455	417	82	-	16000	-	-
927912108313	PL-T 42W/830/4P 1CT	0.320	Yes	B	434	397	82	-	16000	-	-
927912108413	PL-T 42W/841/4P 1CT	0.320	Yes	B	380	379	82	-	16000	-	-

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PL-T Triple 4-Pin Base 6

Order code	Full product name	Lamp Current EL	Dimmable	Energy Efficiency Label (EEL)	Chromaticity Coordinate X	Chromaticity Coordinate Y	Color Rendering Index	RatedAvgLife(See Family Notes)	Avg. Hrs. Life	Lumen Maintenance 2000h	Lumen Maintenance 5000h
927912183513	PL-T 42W/835/4P 1CT	0.320	Yes	B	411	398	82	-	16000	-	-
927914083520	PL-T ALTO 57W/835/4P A 1CT	-	-	-	412	402	82	-	-	-	-
927914084020	PL-T ALTO 57W/841/4P A 1CT	-	-	-	382	389	82	-	-	-	-

Compare table

Order code	Full product name	Luminous Efficacy Lamp EM	Luminous Efficacy Lamp EL	Color Temperature	Lamp Voltage EL	Lumen Maintenance EL 10000h	Lumen Maintenance EM 10000h	Lumen Maintenance EL 5000h	Lumen Maintenance EL 2000h
927910608213	PL-T 18W/827/4P 1CT	67	73	2700	80	79	73	86	93
927910608313	PL-T 18W/830 /4PALTO 1CT	67	73	3000	80	79	73	86	93
927910608413	PL-T 18W/841/4P 1CT	67	73	4100	80	79	73	86	93
927910683513	PL-T 18W/835 GX24q-2 /4P 1CT	73	73	3500	80	79	73	86	93
927899282702	PL-T 26W/827/4P 1BC	-	75	2700	125	79	-	80	90
927911608213	PL-T 26W/827/4P 1CT	69	75	2700	80	79	73	86	93
927911608313	PL-T 26W/830/4P 1CT	69	75	3000	80	79	73	86	93
927911608413	PL-T 26W/841/4P 1CT	69	75	4100	80	79	73	86	93
927911683513	PL-T 26W/835/4P ALTO 1CT	75	69	3500	80	79	73	86	93
927911808213	PL-T 32W/827/4P 1CT	-	75	2700	101	79	-	86	93
927911808313	PL-T 32W/830/4P 1CT	-	75	3000	101	79	-	86	93
927911808413	PL-T 32W/841/4P 1CT	-	75	4100	101	79	-	86	93
927911883513	PL-T 32W/835/4P 1CT	-	75	3500	125	79	-	86	93
927912108213	PL-T 42W/827/4P 1CT	-	74	2700	135	79	-	86	93
927912108313	PL-T 42W/830/4P 1CT	-	74	3000	135	79	-	86	93
927912108413	PL-T 42W/841/4P 1CT	-	74	4100	135	79	-	86	93
927912183513	PL-T 42W/835/4P 1CT	-	74	3500	135	79	-	86	93
927914083520	PL-T ALTO 57W/835/4P A 1CT	-	-	3500	-	-	-	-	-
927914084020	PL-T ALTO 57W/841/4P A 1CT	-	-	4100	-	-	-	-	-

PHILIPS ADVANCE

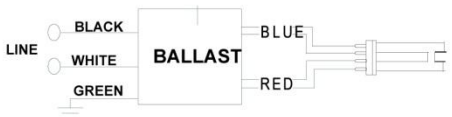
RCF-2S26-H1-LD-QS	
Brand Name	AMBISTAR
Ballast Type	Electronic
Starting Method	Rapid Start
Lamp Connection	Series
Input Voltage	120
Input Frequency	60
Status	Active

Electrical Specifications

Lamp Type	Num. of Lamps	Rated Lamp Watts	Min. Start Temp (°F/C)	Input Current (Amps)	Input Power (ANSI Watts)	Ballast Factor	MAX THD %	Power Factor	MAX Lamp Current Crest Factor	B.E.F.
CFQ26W/G24Q	1	26	0/-18	0.23	27	1.00	10	0.98	1.7	3.70
CFQ26W/G24Q	2	26	0/-18	0.43	51	1.00	10	0.98	1.7	1.96
CFTR26W/GX24Q	1	26	0/-18	0.24	29	1.10	10	0.98	1.7	3.79
CFTR26W/GX24Q	2	26	0/-18	0.45	54	1.00	10	0.98	1.7	1.85
CFTR32W/GX24Q	1	32	0/-18	0.31	36	0.98	10	0.98	1.7	2.72
* CFTR42W/GX24Q	1	42	0/-18	0.38	46	0.98	10	0.98	1.7	2.13

Wiring Diagram

WIRING: (1) LAMP



Green Terminal must be Grounded

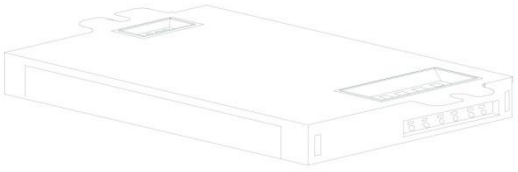
The wiring diagram that appears above is for the lamp type denoted by the asterisk (*)

Standard Lead Length (inches)

	in.	cm.
Black	0	0
White	0	0
Blue	0	0
Red	0	0
Yellow	0	0
Gray		0
Violet		0

	in.	cm.
Yellow/Blue		0
Blue/White		0
Brown		0
Orange		0
Orange/Black		0
Black/White		0
Red/White		0

Enclosure



Enclosure Dimensions

OverAll (L)	Width (W)	Height (H)	Mounting (M)
4.98 "	2.4 "	1.0 "	4.6 "
4 49/50	2 2/5	1	4 3/5
12.6 cm	6.1 cm	2.5 cm	11.7 cm

Revised 03/02/2010

Data is based upon tests performed by Philips Lighting Electronics N.A. 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. All specifications are nominal unless otherwise noted.

PHILIPS LIGHTING ELECTRONICS N.A.
10275 WEST HIGGINS ROAD · ROSEMONT, IL 60018
Tel: 800-322-2086 · Fax: 888-423-1882 · www.philips.com/advance
Customer Support/Technical Service: 800-372-3331 · OEM Support: 866-915-5886