



Robertson TM
WORLDWIDE
INNOVATIVE LIGHTING SOLUTIONS

BALLAST AND LED DRIVER PRODUCT GUIDE





For over 60 years the lighting industry has relied upon Robertson Worldwide as the leader of custom electronic and magnetic ballasts for compact fluorescent lamps. From the first custom magnetic ballast, through High Efficiency NEMA Premium products, to the industry-leading LED Drivers, Robertson is known for its dedication to solving customer challenges. Each item is designed to outperform in its selected application area and is aggressively priced to maximize your profit.

Robertson's high quality ballasts are readily available for existing fixtures and retrofitting markets where energy efficiency is optimum. You will find energy solutions across our expansive product line. The most popular recommendations are listed in this catalog, but the complete lineup is always up-to-date at www.robertsonww.com.

YOUR ROBERTSON WORLDWIDE PRODUCT GUIDE

This catalog is organized around the most popular applications. Simply look up the number and type of lamps to find the correct Robertson product. Handy wiring diagrams and case dimensions are provided toward the end to verify that the ballast (or LED Driver) you have selected will match the existing space requirements. Complete technical information and specification pages are available at www.robertsonww.com.

QUALITY - REPUTATION - VALUE - SERVICE

All Robertson products have the same quality of design, components and manufacturing consistency. Each series has specific features and performance targets that utilize the latest in electronic and magnetic technology.

World Series:	World Class, Highest Performance Ballast on the Market Today
Sterling Series:	Professional Grade, High Efficiency, Commercial and Residential Applications
Performance Series:	Competitive Performance, High Quality OEM Grade Products
Electra Series:	Economical, Energy Star Rated, Ideal for the Residential and Hospitality Market
LED Drivers:	Energy Efficient, Ground-Breaking Products in Solid State Lighting

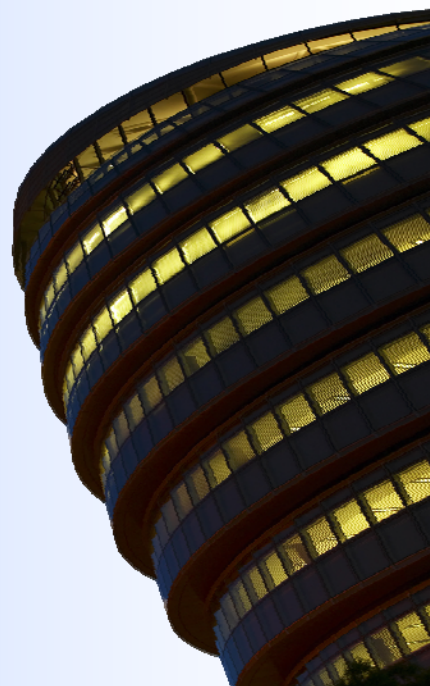
As always, Robertson Customer Service is available to help you, backed with our knowledgeable technical support staff. And now ordering is easy at www.robertsondirect.com!

CONTINUING INNOVATION

Robertson's in-house design team is constantly finding new ways for us to leverage technology for reliable energy efficiency: We have LED Drivers that meet or exceed ENERGY STAR requirements. Our newest ballasts are optimized for longer lamp life, multiple lamp combinations, and they correctly support multi-volt applications to reduce inventory costs and complexity. Our designers continue to advance the technology with patented innovative solutions for energy efficiency, thermal management and wired or wireless control systems integration.

Robertson does "Green". **Every Robertson Worldwide product is RoHS Compliant!** Energy-conscious products include NEMA Premium, T5 & CFL 0-10V Dimming Ballasts, as well as a complete range of ENERGY STAR and Title 24-compliant products. Our award-winning 3-Step Dimming T8 ballast is designed to work with existing fixtures, occupancy sensors and wall switches without rewiring.

We invite you to search for the product that will fulfill all your lighting needs in the pages that follow.



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STANDARD & HIGH EFFICIENCY T5

Electronic, Program Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T5, F21T5, F28T5, F35T5	PST135T5MVW	19	004	World Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
2/1	F14T5, F21T5, F28T5	PSA228T5MV	12D	003, 015C	Sterling Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
2/1	F14T5, F21T5, F28T5	PSV228T5MV	23C	004, 068	
2/1	F14T5, F21T5, F28T5, F35T5	PSV235T5MV	23C	004, 068	
2	F14T5, F21T5, F28T5	PST228T5MVW	19	068	World Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
4/2 ; 3/1	F14T5, F21T5, F28T5	PSV428T5MVEL	23D	096, 097, 098	Sterling Series™, Type CC, Type HL, EOL Protection,

Electronic, Preheat Rapid Start, High Power Factor 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T5, F21T5, F28T5	REU128T5120	3G	023	Type CC, Type HL, EOL Protection, RoHS Compliant
1	F21T5, F28T5, F35T5	REU135T5120	3G	023	

Electronic, Preheat Rapid Start, Normal Power Factor 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F4T5, F6T5, F8T5	RSZ108T5120	3C	003	Electra Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
1	F13T5, F14T5, F21T5	RSZ114T5120	3C	003	
1	F21T5, F28T5	RSZ128T5120	3C	003	
1	F21T5, F28T5, F35T5	RSU135T5120	3B	003	

Magnetic, Preheat Start, Normal Power Factor 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F4T5, F6T5, F8T5	0C48	1V	001	Open Core & Coil, Type 1 Outdoor
1	F4T5, F6T5, F8T5	CC48	2V	001	Clamped Core & Coil, Type 1 Outdoor
1	F4T5, F6T5, F8T5	L48	3A	001	Finger Ballast, Encased, Type HL, Type 1 Outdoor, RoHS Compliant

Magnetic, Preheat Start, Normal Power Factor 277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F4T5, F6T5, F8T5	SP4827	2X	001	Clamped Core & Coil, Type 1 Outdoor, RoHS Compliant
1	F4T5, F6T5, F8T5	L6827	3	001	Finger Ballast, Encased, Type HL, Type 1 Outdoor, RoHS Compliant

STANDARD & HIGH EFFICIENCY T5

Electronic, Program Start, High Power Factor, 100-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T5, F21T5, F28T5, F35T5	PSU135T5IV	3G1	004	CE and RoHS Compliant, EOL Protection, Meets FCC Part 18 (Class B) for EMI and RFI Consumer Limits
1	FT24W/2G11, FT36W/2G11, FT40W/2G11/RS, F24T5HO, F39T5HO	PSU139T5IV	3G1	004	
1	FT50W/2G11/RS, FT55W/2G11/RS, F54T5HO	PSU154T5IV	3G1	004	

HIGH OUTPUT T5

Electronic, Program Start, High Power Factor, 100-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F80T5HO, F54T5HO, FC12T5HO	PSV180T5IV	23C	004	World Series™, CE Compliant, Type CC, Type HL, EOL Protection, RoHS Compliant

Electronic, Program Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F24T5HO, F39T5HO	PST139T5MVW	19	004	World Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
1	F54T5HO	PST154T5MVW	19	004	
2/1	F24T5HO	PSA224T5MV	12D	003, 015C	Sterling Series™ with Leads, Type CC, Type HL, EOL Protection, RoHS Compliant
2/1	F24T5HO, F39T5HO	PSA239T5MV	12D	003, 015C	
2/1	F54T5HO	PSA254T5MV	12D	003, 015C	
2/1	F24T5HO, F39T5HO	PSV239T5MV	23	068	Sterling Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
2/1	F54T5HO	PSV254T5MV	23C	068	
2/1	F54T5HO	PSV254T5MVEL	23B	095	Sterling Series™ with Leads, Type CC, Type HL, EOL Protection, RoHS Compliant
2	F24T5HO	PST224T5MVW	19	068	World Series™, Type CC, Type HL, EOL Protection, RoHS Compliant
2	F24T5HO, F39T5HO	PSV239T5MVW	23	068	
2	F54T5HO	PSV254T5MVW	23	068	
4/2 ; 3/1	F54T5HO	PSB454T5MV	11B	086, 087, 088	Sterling Series™ with Leads, Type CC, Type HL, EOL Protection, RoHS Compliant
4/2 ; 3/1	F54T5HO	PSY454T5MVEL	31	086, 087, 088	

Electronic, Program Start, High Power Factor, 277-347 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	F54T5HO	PSV254T5347EL	23B	068	World Series™ with Leads, Type CC, Type HL, EOL Protection, RoHS Compliant

Call (800) 323-5633 or e-mail info@robertsonww.com today!

LINEAR T8

Electronic, Instant Start, High Power Factor, High Efficiency, 120-277 Volt

* Products with the ISA prefix are electrically interchangeable with ISS and ISU products and meet NEMA Premium/CEE standards. However, there are minor physical attributes that set these two products apart. Please review the specifications, which are available at www.robertsonww.com, to ensure your selection is physically compatible with your fixture design. Case style dimensions are also located toward the end of this book for your convenience.

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F17T8, F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps	ISU132T8HEMVL	3B	O44A	NEMA Premium/CEE Listed Low Ballast Factor RoHS Compliant Anti Arc Anti Striation
2/1	F17T8, F25T8, F28T8, F32T8, (1) F40T8 → includes U and Energy Savings Lamps	ISA232T8HEMVL	12D	O45E	
2/1		ISU232T8HEMVL	3B	O45A	
3/2	F17T8, F25T8, F28T8, F32T8, (2) F40T8 → includes U and Energy Savings Lamps	ISA332T8HEMVL	12D	O46F	
3/2		ISS332T8HEMVL	12B	O46	
4/3	F17T8, F25T8, F28T8, F32T8, (3) F40T8 → includes U and Energy Savings Lamps	ISA432T8HEMVL	12D	O47D	
4/3		ISS432T8HEMVL	12B	O47	
2/1	F17T8, F25T8, F28T8, F32T8, (1) F40T8 → includes U and Energy Savings Lamps	ISA232T8HEMV	12D	O45E	NEMA Premium / CEE Listed Normal Ballast Factor RoHS Compliant Anti Arc Anti Striation
2/1	F17T8, F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps	ISU232T8HEMV	3B	O45A	
3/2	F17T8, F25T8, F28T8, F32T8, (2) F40T8 → includes U and Energy Savings Lamps	ISA332T8HEMV	12D	O46	
3/2		ISS332T8HEMV	12B	O46	
4/3	F17T8, F25T8, F28T8, F32T8, (3) F40T8 → includes U and Energy Savings Lamps	ISA432T8HEMV	12D	O47	
4/3		ISS432T8HEMV	12B	O47	
2/1	F17T8, F25T8, F28T8, F32T8, (1) F40T8 → includes U and Energy Savings Lamps	ISA232T8HEMVH	12D	O45E	NEMA Premium/CEE Listed High Ballast Factor RoHS Compliant Anti Arc Anti Striation
2/1		ISS232T8HEMVH	12B	O45	
3/2	F17T8, F25T8, F28T8, F32T8, (2) F40T8 → includes U and Energy Savings Lamps	ISA332T8HEMVH	12D	O46F	
3/2		ISS332T8HEMVH	12B	O46	
2/1	F96T8	ISR259T8MVW	12C	O45	Sterling Series™, RoHS Compliant

LINEAR T8

Electronic, Program Start, High Power Factor, High Efficiency, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F17T8, F25T8, F28T8, F32T8, F40T8 → includes U and Energy Savings Lamps (Parallel Lamp Operation)	PSS132T8HEMVL	12B	O23A	NEMA Premium/CEE Listed Low Ballast Factor RoHS Compliant
2/1		PSS232T8HEMVL	12B	O15	
3/2		PSL332T8HEMVL	12A	O94	
4/3		PSL432T8HEMVL	12A	O91	
1	F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps (Series Lamp Operation)	PSA132T8HEMV	12D	OO3	NEMA Premium/CEE Listed Normal Ballast Factor RoHS Compliant
1	F17T8, F25T8, F28T8, F32T8, F40T8 → includes U and Energy Savings Lamps (Parallel Lamp Operation)	PSS132T8HEMV	12B	O23A	
2/1		PSS232T8HEMV	12B	O15	
2	F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps (Series Lamp Operation)	PSA232T8HEMV	12D	O59	
3/2	F17T8, F25T8, F28T8, F32T8, F40T8 → includes U and Energy Savings Lamps (Parallel Lamp Operation)	PSL332T8HEMV	12A	O94	
4/3		PSL432T8HEMV	12A	O91	
1	F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps (Series Lamp Operation)	PSA132T8HEMVH	12D	OO3	NEMA Premium/CEE Listed High Ballast Factor RoHS Compliant
1	F17T8, F25T8, F28T8, F32T8, F40T8 → includes U and Energy Savings Lamps (Parallel Lamp Operation)	PSS132T8HEMVH	12B	O23A	
2/1		PSS232T8HEMVH	12B	O15	
2	F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps (Series Lamp Operation)	PSA232T8HEMVH	12D	O59	
3/2	F17T8, F25T8, F28T8, F32T8, F40T8 → includes U and Energy Savings Lamps (Parallel Lamp Operation)	PSL332T8HEMVH	12A	O94	

Electronic, Instant Start, High Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	F17T8, F25T8, F28T8, F32T8, F40T8 → includes U and Energy Savings Lamps	IEU232T8120	12B	O45	Performance Series™, RoHS Compliant
3/2		IEL332T8120	12A	O46	
4/3		IEL432T8120	12A	O47	

LINEAR T8

Electronic, Preheat-Rapid Start, High Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F13T8, F15T8, F17T8, F25T8, F32T8 → includes U Lamps	REU132T8120	3G	O23	Type CC, EOL Protection, RoHS Compliant

Electronic, Preheat-Rapid Start, High Power Factor, 277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F13T8, F15T8, F17T8, F25T8, F32T8 → includes U	REU132T8277	3G	O23	Type CC, EOL Protection, RoHS Compliant

Electronic, Preheat-Rapid Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T8, F15T8, F17T8	RP1420	2B	OO3	RoHS Compliant
1	F14T8, F15T8, F17T8, F18T8	RSW120T12120	9W2	O23	Electra Series™, Type CC, Type 1 Outdoor, EOL Protection, RoHS Compliant
2	F14T8, F15T8, F17T8	RSW220T12120	9W2	O22A	
2	F25T8, F30T8, F32T8	RSW240T12120	9W	O22A	

Electronic, Instant Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	F15T8, F17T8, F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps	ISU232T8120	3G	O45	Electra Series™, RoHS Compliant
4/3	F14T8, F15T8, F17T8, F25T8, F28T8, F32T8 → includes U and Energy Savings Lamps	ISL432T8120	12A	O47	

Magnetic, Preheat Self-Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T8, F15T8	SS2P	7	006	Encased & Potted, Class P, Type HL, Type 1 Outdoor, RoHS Compliant

Magnetic, Preheat Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T8, F15T8	L15A	3	001	Finger Ballast, Encased, Type HL, Type 1 Outdoor, RoHS Compliant
1	F14T8, F15T8	SP2	2	001	Clamped Core & Coil, Type 1 Outdoor, RoHS Compliant
1	F30T8	SN40BP	9	002	Encased & Potted, Class P, Type HL, Type 1 Outdoor

STANDARD T12

Electronic, Instant Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	F48T12, F60T12, F64T12, F72T12, F84T12, F96T12	ISD296T12MVIP	15A	O45	Individually Shrink Wrapped, 6 Per Carton, RoHS Compliant

Electronic, Preheat Rapid Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T12, F15T12, F20T12	RP1420	2B	OO3	RoHS Compliant
1	F14T12, F15T12, F20T12	RSW120T12120	9W2	O23	Electra Series™, Type CC, EOL Protection, RoHS Compliant
1	F30T12, F40T12	RSW140T12120	9W2	O23	
2	F14T12, F15T12, F20T12	RSW220T12120	9W2	O22A	
2	F30T12, F40T12	RSW240T12120	9W	O22A	

Electronic, Rapid Start, High Power Factor, 120-277 Volt

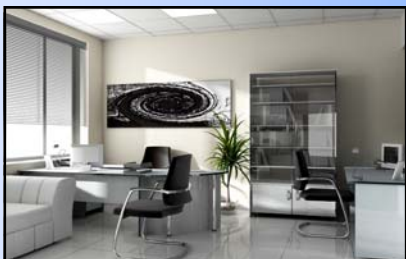
No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2	F30T12, F40T12 → includes Energy Savings Lamp	RSS240T12MVIP	12B	O15	Individually Shrink Wrapped, 10 per carton, RoHS Compliant

Magnetic, Preheat Self-Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T12, F15T12, F20T12	SS2P	7	006	Encased & Potted, Class P, Type 1 Outdoor, RoHS Compliant

Magnetic, Preheat Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T12, F15T12, F20T12	L15A	3	001	Finger Ballast, Encased, Class P, Type 1 Outdoor, RoHS Compliant
1	F14T12, F15T12, F20T12	SP2	2	001	Clamped Core & Coil, Type 1 Outdoor, RoHS Compliant
1	F30T12, F40T12	SN40BP	9	002	Encased & Potted, Class P, Type 1 Outdoor



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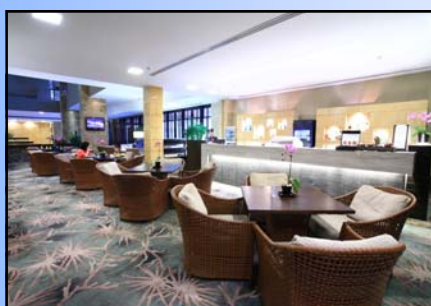
HIGH OUTPUT (800mA)

Electronic, Program Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	F24T12HO, F36T12HO, F48T12HO, F60T12HO, F72T12HO, F84T12HO, (1)F96T12HO → includes Energy Savings Lamps	PSD248T12HOMV	15	O15	World Series™, Type 1 Outdoor, Type HL, Type CC, EOL Protection, RoHS Compliant

Electronic, Rapid Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	F48T12HO, F60T12HO, F72T12HO, F84T12HO, (1)F96T12HO → includes Energy Savings Lamps	RSD296T12HOMVIP	15A	O15	Sterling Series™, Individually Shrink Wrapped, 6 Per Carton, RoHS Compliant



CUSTOMIZATION IS OUR SPECIALTY

Here at Robertson Worldwide, we take pride in leading the way to great methods of innovation on behalf of our loyal customers. Our willingness to solve specific challenges is widely known throughout the lighting industry. Customers often approach us with unique requirements and our experienced engineering staff is able to quickly deliver made-to-order solutions.

Whether your customization inquiry is simple or challenging, we will take on any customization task from changing lead lengths to re-configuring terminals. You can be assured that no request is too big or too small for Robertson.

Our design team, as well as technical support and customer service staff, are all Chicago-based. They offer prompt service, backed with quality experience— a valuable tool in this industry. Simply call 1-800-323-5633 or send an inquiry to info@robertsonww.com.

Looking for more detail about our products as well as technical information? Not a problem! Download complete specification sheets from the Robertson Worldwide website at www.robertsonww.com. It's as quick as a few clicks!

DIMMING APPLICATIONS

Electronic, Program Start, High Power Factor, 120-277 Volt, 3-Step Dimming

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F25T8, F32T8 → includes U and Energy Savings Lamps	PSL132T8MV3D	12A	O92	Sterling Series™, 3-Step Dimming, Type HL
2		PSL232T8MV3D	12A	O90	
3		PSL332T8MV3D	12A	O93	

Robertson 3-Step Dimming Ballast: This program start, multi-volt, electronic ballast combines the simplicity of installation with the versatility of optional control devices such as motion sensors, occupancy sensors, vacancy sensors, photocells, time delay switches, or standard wall switches, to create three levels of light output while maintaining uniform distribution from your fixture. To see if this 3-Step Dimming ballast is the right fit for your application, view our complete specification pages at www.robertsonww.com today!

Electronic, Program Start, High Power Factor, 100-277 Volt, 0-10 Volt Dimming

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	F14T5, F21T5, F28T5	PST128T5IVCD	19D	043	Sterling Series™, Type CC, EOL Protection, RoHS Compliant
1	F24T5, F39T5, FC22, FC40, FT18, FT24, FT36, FT40	PST139T5IVCD	19D	043	
1	F54T5, FT55	PST154T5IVCD	19D	043	
2	F14T5, F21T5, F28T5, F35T5	PSV235T5IVCD	23C	050	Sterling Series™, Type CC and HL, EOL Protection, RoHS Compliant
2	F24T5, F39T5, FC22, FC40, FT18, FT24, FT36, FT40	PSV239T5IVCD	23D	050	
2	F54T5, FT55, FT50, F58T8	PSV254T5IVCD	23D	050	Sterling Series™, Type CC, EOL Protection, RoHS Compliant

HIGH BAY OCCUPANCY SENSORS

Ideal for warehouses, garages, and stairwells, Robertson Occupancy Sensors save you energy (and money) with the use of sophisticated passive infrared (PIR) technology. The OSP1500HFB comes with 2 lenses for narrow and wide aisles. Our optional fixture sensor adapter (OSAD01) to optimize the achieved field of view.

Sensor Type	Passive Infrared (PIR)		
Input Voltage ±10% (VAC)	120	277	347
Input Frequency ±5% (Hz)	50-60	50-60	50-60
Input Current (A)	6.67	4.33	4.32
Volt Amps (VA)	800	1200	1500
Unit Weight (LB.)	1.0		
Unit Color	White		
Maximum Case Temperature	75°C/167°F		
Maximum Ambient Temperature	-10°C/14°F - 70°C/158°F		



The optional fixture sensor adapter provides alternate keyholes for height adjustment during installation. The threaded snap-in nipple attaches to 1/2" trade size knockout holes in the luminaire or electrical box.

OSP1500HFB

Adjustable Off Delay: 30 Seconds. - 30 Minutes
Adjustable Light Level: 40 to 2000 Lux
Mounting Height: 20 - 40 Feet
Leads: 42" Pre Stripped Color Coded 18 AWG
UL 773A Listed
CSA C22.2-205 Certified (cUL)
RoHS Compliant

COMPACT & CIRCULAR FLUORESCENT

Electronic, Program Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	CFT5, CFT7, CFT9, CFS/CFQ10, CFQ/CFTR13, CFS16	PSM213CQMVW/DW/DSW	28	152, 153	World Series™, DW: Dual Entry, DSW: Dual Entry with Studs, RoHS Compliant
2/1	CFT13, CFQ/CFTR18, CFS21	PSM218CQMVW/DW/DSW	28	152, 153	
2/1	CFQ/CFTR26, CFS28, CFTR32, CFTR42, FC9T5, FC12T5, FT24	PSM226CQMVW/DW/DSW	28	152, 153	
2/1	CFQ/CFTR26, CFTR42W/GX24q, CFS28, CFTR32, FC9T5, FC12T5, FT24, FT36, FT40	PSP242TRMVW/DW/DSW	24	152, 153	
2/1	CFT5, CFT7, CFT9, CFS/CFQ10, CFQ/CFTR13, CFS16	PSM213CQMVWCE/DWCE/DSWCE	28	152, 153	World Series™, DWCE: Dual Entry, DSWCE: Dual Entry with Studs, RoHS and CE Compliant
2/1	CFT13, CFQ/CFTR18, CFS21	PSM218CQMVWCE/DWCE/DSWCE	28	152, 153	
2/1	CFQ/CFTR26, CFS28, CFTR32, CFTR42, FC9T5, FC12T5, FC8T9, FC12T9, FC16T9, FT24	PSM226CQMVWCE/DWCE/DSWCE	28	152, 153	

Electronic, Program Start, High Power Factor, 347 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	CFT5, CFT7, CFT9, CFS/CFQ10, CFQ/CFTR13, CFS16	PSM213CQ347W/DW/DSW	28	152, 153	World Series™, DW: Dual Entry, DSW: Dual Entry with Studs, RoHS Compliant
2/1	CFT13, CFQ/CFTR18, CFS21	PSM218CQ347W/DW/DSW	28	152, 153	
2/1	CFQ/CFTR26, CFS28, CFTR32, FC9T5, FC12T5, FT24, FT36, FT40	PSM226CQ347W/DW/DSW	28	152, 153	
2/1	CFQ/CFTR26, CFS28, CFTR32, CFTR42, FC9T5, FC12T5, FT24	PSM242TR347W/DW/DSW	28	152, 153	

Electronic, Preheat Rapid Start, High Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	CFQ13, CFTR13	REO113CQ120	7E	103	Performance Series™, RoHS Compliant
1	CFQ18, CFTR18	REO118CQ120	7E	103	
1	CFQ26, CFTR26	REO126CQ120	7E	103	

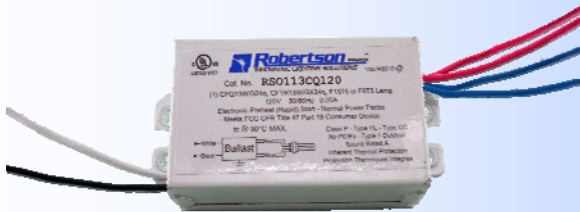
Electronic, Preheat Rapid Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	FC8T9	RSO122C120WS	7E	O61	RoHS Compliant
1	FC12T9, FC16T9	RSW140C120WS	9W2	O36	
2	FC8T9 + FC12T9 or (2) FC8T9, FC12T9 + FC16T9 or (2) FC12T9	RSW3240C120WS	9W2	O37	

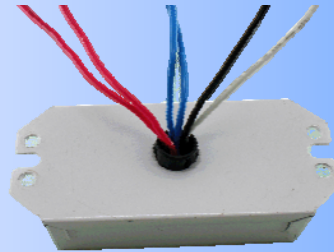
COMPACT & CIRCULAR FLUORESCENT

Electronic, Preheat Rapid Start, Normal Power Factor, 120 Volt

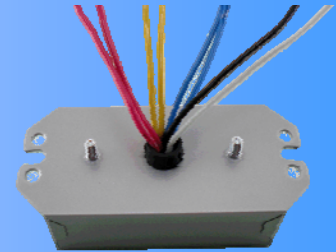
No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	CFQ13, CFTR13	RSO113CQ120/BL/BLS	7E	103	Electra Series™, Type 1 Outdoor, Type CC, Type HL, EOL Protection, RoHS Compliant BL: Bottom Leads, BLS: Bottom Leads with Studs
1	CFQ18, CFTR18	RSO118CQ120/BL/BLS	7E	103	
1	CFQ26, CFTR26	RSO126CQ120/BL/BLS	7E	103	
1	CFQ26, CFTR26, CFTR32, CFTR42	RSO142TR120/BL/BLS	7E	103	
2	CFQ13, CFTR13	RSO213CQ120/BL/BLS	7E	108	
2	CFQ18, CFTR18	RSO218CQ120/BL/BLS	7E	108	
2	CFQ26, CFTR26	RSO226CQ120/BL/BLS	7E	108	



RSO113CQ120



RSO118CQ120BL



RSO126CQ120BLS

NEED MORE INFORMATION?

Download complete product specification sheets on the Robertson Worldwide website at www.robertsonww.com.

Specifications subject to change without notice.

Magnetic, Preheat Start, High Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	CFT5, CFT7, CFT9	HP68P	7	102	Encased & Potted, Class P, Type HL, Type 1 Outdoor, RoHS Compliant
2	CFT13, CFQ13	HP213P	8	138	
2	CFT13, CFQ13	HPN213P	8	110	Encased & Potted, Class P, Type HL, Type 1 Outdoor

COMPACT & CIRCULAR FLUORESCENT

Magnetic, Preheat Start, High Power Factor, 277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	CFT13, CFQ13	HP1527P	8	102	Encased & Potted, Class P, Type HL, Type 1 Outdoor, RoHS Compliant
1	CFQ26, CFTR26	HP2627P	8	102	
2-Series	CFT13, CFQ13	HP21327SP	8	112	

Magnetic, Preheat Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	CFT5, CFT7, CFT9	SP68P	2Z	001	Clamped Core & Coil, Class P, Type 1 Outdoor, RoHS Compliant
1	CFT5, CFT7, CFT9	SP79P	2W	101	Clamped Core & Coil, Class P, Type 1 Outdoor
1	CFT13, CFQ13	015P	1	101	Open Core & Coil, Class P, Type 1 Outdoor, RoHS Compliant
1	CFT13, CFQ13	OC1320P	1J	001	Open Core & Coil, Class P, Type 1 Outdoor
1	CFT13, CFQ13	CC1320P	2V	101	Clamped Core & Coil, Class P, Type 1 Outdoor
1	CFQ26, CFTR26	SN28P	9	102	Encased & Potted, Class P, Type 1 Outdoor

Magnetic, Preheat Start, Normal Power Factor, 277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	CFT5, CFT7, CFT9	04827P	1	101	Open Core & Coil, Class P, Type 1 Outdoor, RoHS Complaint
1	CFT5, CFT7, CFT9	SP4827P	2X	001	Clamped Core & Coil, Class P, Type 1 Outdoor, RoHS Compliant
1	CFT13, CFQ13	01527P	1X	101	Open Core & Coil, Class P, Type 1 Outdoor, RoHS Compliant

Magnetic, Preheat Self Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	FC6T9, FC8T9	SSN2PWS	7	036	Encased & Potted, Class P, Type HL, Type 1 Outdoor

ROBERTSON REPLACER™ KITS

Robertson is pleased to introduce the Robertson Replacer™: A convenient, versatile replacement kit designed to support the needs of end-users, distributors and retro-fitters. The Robertson Replacer contains the World Series™ ballast with Patented All-Star EOL Protection, guarding against potential hazardous conditions. End-of-Life protects the customer, ballast, and fixture against catastrophic failure by shutting the output power off to the lamp when the lamp reaches an end-of-life condition from any power runaway. This useful kit includes everything necessary to replace a variety of mounting options found in many of the compact fluorescent fixtures today.

Electronic, Program Start, High Power Factor, 120-277 Volt

Robertson Worldwide	Mult-E Kit Universal	Advance	Osram	ESI	ACE	Keystone
PSM213CQMVRK	C213UNVSE/BE/BES	ICF-2S13-H1-LD ICF-2S13-M1-BS ICF-2S13-M1-LS	QTP 1/2x13CF/UNV QTP 1/2x13CF/UNV BS QTP 1/2x13CF/UNV TS	ES-2/1-CFQ-13/10-UNV-C/D ES-1-2D-16/10-UNV-D	CSD-UV/8PS	KTEB-2B-UV-TP POC-DW KTEB-213-UV-TP-PSD
PSM218CQMVRK	C218UNVSE/BE/BES	ICF-2S18-H1-LD ICF-2S18-M1-BS ICF-2S18-M1-LS REL-2Q18 VEL-2Q18 R-2Q18-4P-TP V-2Q18-4P-TP	QTP 1/2x18CF/UNV QTP 1/2x18CF/UNV BS QTP 1/2x18CF/UNV TS	ES-2/1-CFQ-18/10-UNV-C/D ES-1-2D-21-UNV-D	CSD-UV18PS	KTEB-218-UV-TP-PIC-DW KTEB-218-UV-TP-PSD
PSM226CQMVRK	C2642UNVSE/BE/BES C132SR120BE C132SR277120BE C226SR120BE C226SR277BE	ICF-S26-H1-LD ICF-S26-H1-LD ICF-S26-H1-LS REL-1T32 VEL-1T32 REL-1T42 VEL-1T42	QTP 2x26/UNV QTP 2x26/UNV BS QTP 2x26/UNV TS QTP 1/2xCF/UNV QTP 1/2xCF/UNV BM QTP 1/2xCF/UNV PM QTP 1/2xCF/UNV TM	ES-2/1-CFQ-26-UNV-C/D ES-1-CFH-42/32/36-UNV-C/D ES-1-T5C-40/22-UNV-D	CSS-UV42PS	KTEB-226-UV-TP-PIC-DW KTEB-226-UV-TP-PIC-DW
PSP242TRMVRK	C242 UNVSE/BE C242 UNVSE/BES	ICF-2S42-H1-LD ICF-2S42-M1-BS ICF-2S42-M1-LS	QTP2x26/32/42CF/UNV QTP2x26/32/42CF/UNV BM QTP2x26/32/42CF/UNV PM QTP2x26/32/42CF/UNV TM	N/A	CSD-UV32 PSX CSD-UV42 PSHR	KTEB-242-UV-TP-PIC-DW

Electronic, Program Start, High Power Factor, 347 Volt

Robertson Worldwide	Mult-E Kit Universal	Ultrasave
PSM213CQ347RK	C213/347ME C213/347MES	UR218347MHT-DL
PSM218CQ347RK	C218/347BE C218/347ME C218/347BES C218/347MES	UR218347MHT-DL
PSM226CQ347RK	C226/347BE C226/347SE C226/347BES	UR226357MHT-DL UR226347MHT-SL
PSM242TR347RK	C242/347BE C242/347SE C242/347BES	UR242347MHT-BL UR242347MHT-DL UR242347MHT-SL

EACH KIT INCLUDES:

- World Series™ Dual Entry Ballast
- Mounting Plate Adapter
- (2) Self Tapping Screws
- (2) 8-32 Machine Nuts
- Lead Wire Set
- Wire Extraction Tool
- Detailed Instructions

HIGH INTENSITY DISCHARGE KITS

Magnetic, Reactor, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	S76-35W	BLU0035A04900	40F	301	Open Core & Coil, RoHS Compliant
1	S68-50W	BLU0050A04900	40G	301	Open Core & Coil, RoHS Compliant
1	S62-70W	BLU0070A04900	40H	301	Open Core & Coil, RoHS Compliant
1	S54-100W	BLU0100A04900	40I	301	Open Core & Coil, RoHS Compliant
1	S55-150W	BLU0150A04900	40J	301	Open Core & Coil, RoHS Compliant

HID: THE WHOLE ARC

High Intensity Discharge (HID) lamps produce light by an arc discharge between two electrodes at opposite ends of an arc tube. This tube is filled with both gas and metal salts. The gas facilitates the arc's initial strike. This light is produced by current passing through a vapor at relatively high pressure as with fluorescent lamps. The function of HID ballasts is to control the starting current, operation current and voltage necessary to initiate and sustain the arc.

Robertson Worldwide carries a broad line of cooler-running HID ballasts for most HID lamp types including Metal Halide, High Pressure Sodium, Low Pressure Sodium, and Mercury Vapor. We have recently expanded our HID line to include some of the coolest-running quad-tap ballasts available.

HID lamps have a higher luminous efficacy than fluorescent and incandescent lamps because more of their radiation is in visible light, as opposed to heat. HID products also give more light output per watt of electricity input.

EACH KIT INCLUDES:

- (1) Ballast
- (1) Mounting Bracket (Ballast)
- (1) Cylindrical Ignitor
- (1) Mounting Strap (Ignitor)
- (2) Machine Screws # 8-32
- (2) Hex Machine Screw Nuts # 8-32
- (2) Lock Washers
- (4) Flat Washers

POPULAR APPLICATIONS

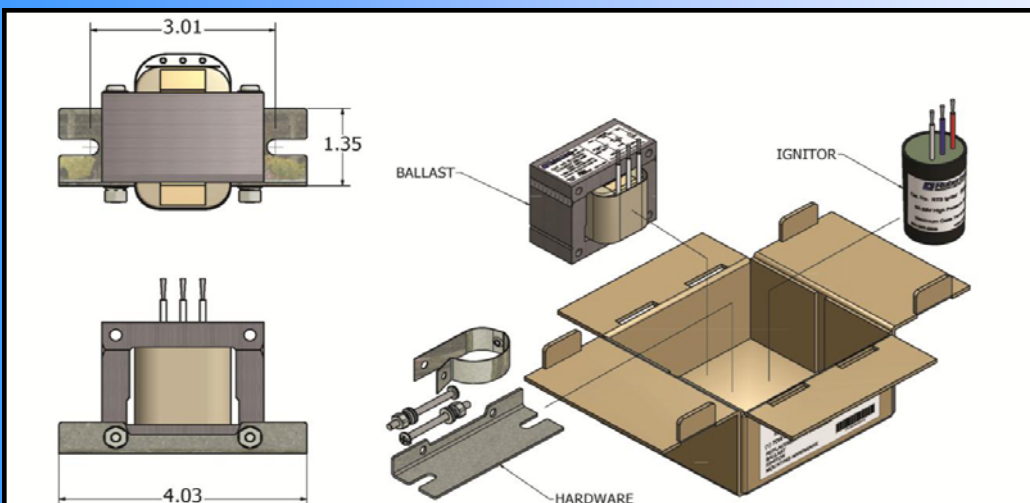
HID lamps are typically used when high levels of light over large areas are required, and when energy efficiency and/or light intensity are desired. Most HID lamps produce significant UV radiation and require UV-blocking filters to prevent UV-induced degradation of lamp fixture components.

In order to ensure we achieve your biggest lighting solutions, Robertson Worldwide HID ballasts are most

popular for the following applications:

- ◇ Parking Lots
- ◇ Street Lighting
- ◇ Sports Stadiums
- ◇ Exhibition Halls
- ◇ Factories
- ◇ Roadways

Let Robertson provide all of your High Intensity Discharge lighting needs today!



HIGH INTENSITY DISCHARGE KITS

Magnetic, High Pressure Sodium, High Power Factor, 120-208-240-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	70W-S62	ALU0070H04912	44C	315	High Reactance Autotransformer, RoHS Compliant
1	400W-S51	CLU0400H04912	45S	313	Constant Wattage Autotransformer, RoHS Compliant
1	1000W-S52	CLU1000H04913	46H	313	Constant Wattage Autotransformer, RoHS Compliant

Magnetic, Pulse Start Metal Halide, High Power Factor, 120-208-240-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	70W-M98	AMH0070H04912	44B	315	High Reactance Autotransformer, RoHS Compliant
1	100W-M90	AMH0100H04912	44D	315	High Reactance Autotransformer, RoHS Compliant
1	400W-M155	CMH0400H04912	45I	313	Constant Wattage Autotransformer, RoHS Compliant

Magnetic, Probe Start Metal Halide, High Power Factor, 120-208-240-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	175W-M57	CMH0175H04932	44I	302	Constant Wattage Autotransformer, RoHS Compliant
1	250W-M58	CMH0250H04932	45D	302	Constant Wattage Autotransformer, RoHS Compliant

Magnetic, Probe Start Metal Halide, High Power Factor, 120-208-240-277-480 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	400W-M59	CMH0400N04932	45R	314	Constant Wattage Autotransformer, RoHS Compliant

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- Cross Reference Search Tool
- Distributor Information
- News & Press Updates
- Contact Information



Call (800) 323-5633 or e-mail info@robertsonww.com today!

UV/GERMICIDAL

Electronic, Instant Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	G14T5-G67T5	REI164G6MV	12	044A	Class P, Type HL, Type 1 Outdoor, RoHS Compliant
2/1	F10T5-G64T5	REI264G6MV	15	045	

Electronic, Program Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	GPH212T5-GPH810T5, GPL18K, GPL36K, TUV18WPL-L, TUV36PL-L, TUV55WPL-L	PSM2GPH18MVDW	28	152,153	World Series™, Class P, Type HL, Type CC, Type 1 Outdoor, EOL Protection, RoHS Compliant

Electronic, Preheat Rapid Start, Normal Power Factor, 120 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	GPH118T5-GPH383T5, TUV18WPL-L, GPL18K	RSN1GPH20120	7	003	Class P, Type HL, Type 1 Outdoor, RoHS Compliant

Electronic, Preheat Rapid Start, Normal Power Factor, 120/230 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	GPH1785-GHP436T5	RSO1G20DV	7B	077	Class P, Type HL, Type 1 Outdoor, RoHS Compliant
1	GPH450T5-GHP638T5 GPL18K, TUV36WPL-L	RSO1G25DV	7B	077	
1	GPH620T5-GHP851T5 GPL36K, TUV36WPL-L	RSO1G40DV	7B	077	
1	GPH1785-GHP436T5	RSO1GPH20DV	7B	077	Class P, Type HL, Type 1 Outdoor, Lamp Out LED, Resettable Thermal Protection, RoHS Compliant
1	GPH450T5-GHP638T5 GPL18K, TUV36WPL-L	RSO1GPH25DV	7B	077	
1	GPH620T5-GHP851T5 GPL36K, TUV36WPL-L	RSO1GPH40DV	7B	077	

UV/GERMICIDAL HIGH OUTPUT (800mA)

Electronic, Instant Start, High Power Factor, 120-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
1	G14T5HO-G67T5HO	REI164G6HOMV	12	044A	Class P, Type HL, Type 1 Outdoor, EOL Protection, RoHS Compliant
2/1	G10T5HO-G64T5HO	REI264G6HOMV	15	045	

Electronic, Program Start, High Power Factor, 100-277 Volt

No. of Lamps	Lamp Operation	Model Number	Case Style	Wiring Diagram	Features / Notes
2/1	GPH212T5HO-GPH893T5HO, TUV55WPL-L, TUV60WHO, TUV75WHO	PSP2GPH40HOVDW	24	152,153	World Series™, Class P, Type HL, Type CC, Type 1 Outdoor, EOL Protection, RoHS Compliant

LED DRIVERS

Constant Current

Model Number	Output Power (W)	Current (mA)	Output Voltage	Input Voltage	Power Factor	Case Style	Wiring Diagram	Features / Notes
LDPN1003C35IVT (LD003C035TIA)*	1-3	350	3-9	100-240	≥0.50	7G	502	Small Square Package, Screw Terminals for Easy Connections
LD003C035LIB	1-3	350	3-9	100-240	≥0.45	7K	501	Small Package, Potted with Leads for Easy Connections
LD003C035LIC	1-3	350	3-9	100-240	≥0.40	7L	501	
LD004C035TIB	1-4	350	3-12	100-240	≥0.40	7M	501	Screw Terminals
LD006C035LRAP	2-6	350	5-16	120	≥0.75	3C3	502A	Dimming (Forward Phase/Triac)
LDPZ1006C35IVT (LD006C035TIA)*	1-6	350	3-18	100-240	≥0.40	3D	502	Push Button Terminals, Short Circuit Protection
LDPN3008C35120L (LD008C035LRA)*	2.5-8	350	7.2-27	120	≥0.60	7J	501	Small Package, Potted with Leads
LD008C035TIC	1-8	350	3-24	100-240	≥0.40	7H	507	Screw Terminals
LD009C035LIA	1-9	350	3-27	100-240	≥0.50	7N	501	Corded Case, Small Round Package, Potted & Leaded
LD010C035LRBL	5-8	350	7.2-27	120	≥0.60	7R	506	Local Dimming Control using 10K Potentiometer
LD012C035LRAP	4-12	350	20-30	120	≥0.90	3C3	511	Dimming (Forward Phase/Triac), High Power Factor
LD012C035TIA	6-12	350	18-36	100-240	≥0.95	27A	502	Screw Terminals, High Power Factor
LD012C035TIB	6-12	350	18-36	100-240	≥0.95	3G1	507	Pushbutton Terminals, High Power Factor
LD012C035TIC	6-12	350	18-36	100-240	≥0.95	9W3	507	Screw Terminals, High Power Factor
LD018C035TIA	1-18	350	30-54	100-240	≥0.95	24A	502	Pushbutton Terminals, High Power Factor
LD018C035TIB	10-18	350	30-54	100-240	≥0.95	19	507	
LD018C035LWC	1-18	350	30-54	100-277	≥0.95	24R	501	Leaded, High Power Factor
LD018C035LMD	10-18	350	30-54	120-277	≥0.95	24C	501	Potted & Leaded, Push Button Terminals, High Power Factor
LD003C070TIA	1-3	700	4-5	100-240	≥0.45	7K	502	Small Package, Screw Terminals
LD003C070LIB	2-3	700	4-5	100-240	≥0.55	7K	501	Small Package, Potted with Leads, Multi Voltage
LD004C070TIA	2-4	700	4-7	100-240	≥0.45	7M	502	Small Package, Screw Terminals
LD006C070LIA	1-6	700	4-10	100-240	≥0.50	7N	501	Small Round Package, Potted & Leaded
LD006C070TIB	1-6	700	4-10	100-240	≥0.50	7H	502	Screw Terminals
LD009C070LIA	3-9	700	4-13	100-240	≥0.50	7N	501	Small Round Package, Potted Leads
LD012C070TIC	6-12	700	8-18	100-240	≥0.95	27A	502	Screw Terminals, High Power Factor
LD012C070TIA	6-12	700	8-18	100-240	≥0.95	27A	502	
LDPP1018C70IVT (LD018C070TIA)*	10-18	700	12-27	100-240	≥0.90	24A	501	Push Button Terminals, High Power Factor
LDPH1025C120IVT (LD025C120TIAM)*	5-25	700/1000 /1200	3-19	100-240	≥0.95	25A	502	Selectable High Constant Current, Low EMI, High Power Factor

LED DRIVERS

Constant Voltage

Model Number	Output Power (W)	Current (mA)	Output Voltage	Input Voltage	Power Factor	Case Style	Wiring Diagram	Features / Notes
LDPN2010V12IVT (LD010V012TIA)*	10	40-830	12	100-240	≥0.55	7H	507	Polycarbonate Housing, Screw Terminals for Easy Connections
LD020V012TIA	20	80-1670	12	100-240	≥0.95	27A	507	High Power Factor, Screw Terminals
LD020V024TIA	20	40-830	24	100-240	≥0.95	27A	507	
LD060V012LRA	60	1250-5000	12	120	≥0.95	12A	504	Steel Case with Leads, Enhanced EMI/RFI
LD060V024LRA	60	630-2500	24	120	≥0.95	12A	504	Steel Case with Leads
LD060V024LRB	60	290-2500	24	120	≥0.95	24	504	Steel Case with Leads High Power Factor
LD060V024LMB	60	375-2500	24	120-277	≥0.95	24	504	Steel Case with Leads
LD080V024LRA	80	830-3300	24	120	≥0.95	12A	504	

* Part numbers in parenthesis indicate a change in the product part number. The actual product and all corresponding data remains the same.

LED TERMS: EXPLAINED

Anode: The positively charged electrode by which the electrons leave a device; the positive terminal of an LED.

Cathode: The negatively charged electrode by which electrons enter an electrical device; the negative terminal of an LED.

CE Rated: The CE Mark on a product identifies it as complying with all of the safety and performance requirements as established by the European Union.

Class 2: A source having limited voltage and energy capacity. UL Class 2 Rating means output is considered safe to contact and no major safety protection is required at LED luminaire level. The output limits are 60 Vdc or 5 Adc or 100 Watts. All three parameters must be in compliance in order to be considered a Class 2 Power Unit.

Constant Current: An output type which, regardless of load current level, does not change.

Constant Voltage: An output type which, regardless of load voltage level, does not change.

Forward Phase Dimming: A dimming control method which uses line voltage only.

IP Rating: The IP rating (Ingress Protection Rating) is defined by the International Standard IEC 60529 as a code which classifies and rates the degrees of protection provided against the intrusion of solid objects (including body parts like hands and fingers), dust, accidental contact, and water in mechanical casings and with electrical enclosures.

Light Emitting Diode (LED): A semiconductor device that emits visible light when an electric current passes through it. Early LEDs emitted low-intensity red light, but modern versions are available across the visible, ultraviolet and infrared wavelengths, with very high brightness.

Maximum Power: The maximum number of continuous Watts to be connected to the LED Driver.

Minimum Power: The minimum number of continuous Watts (where applicable) to be connected to the LED Driver.

Parallel: Wiring with a load connected in multiple branches.

Potentiometer: A three-terminal resistor with a sliding contact that forms an adjustable voltage divider that is used for measuring an unknown voltage by comparison to a standard voltage. A light dimmer uses a potentiometer to control the switching of a Triac (Triode for Alternating Current), and so indirectly controls the brightness of lamps.

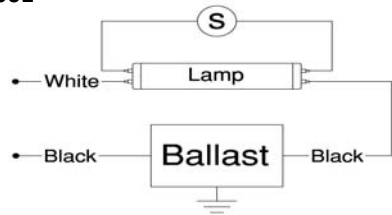
Series: Wiring with a load connected end-to-end in a single branch.

Solid State Lighting: A type of lighting that uses semiconductor light emitting diodes (LED's), organic light emitting diodes (OLED's) or polymer light-emitting diodes (PLED's) as sources of illumination rather than electrical filaments or plasma, which is used in arc lamps, such as fluorescent lamps.

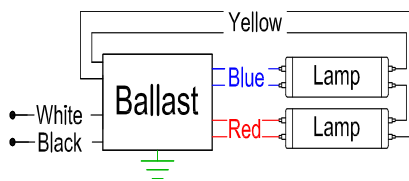
Through-Hole LED: This kind of package is soldered "through holes" to the circuit board. The LED chip is seated in a reflector and light is emitted by a lens integrated into the package. Different radiation characteristics are produced as a function of chip-to-lens spacing and the shape of the lens.

BALLAST WIRING DIAGRAMS

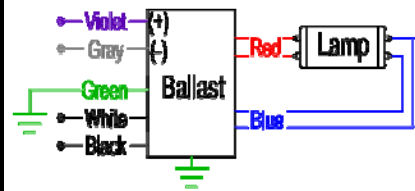
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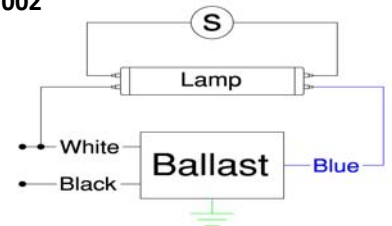
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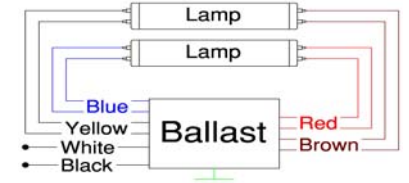
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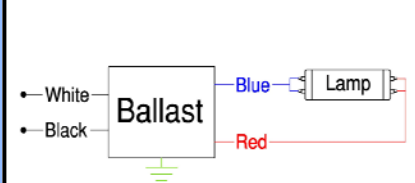
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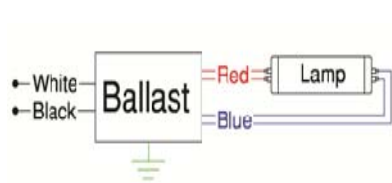
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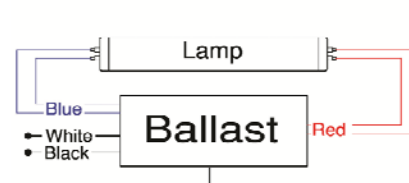
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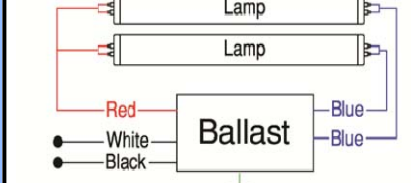
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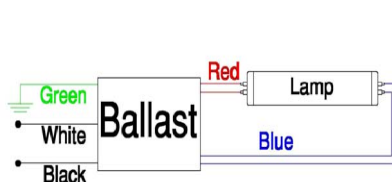
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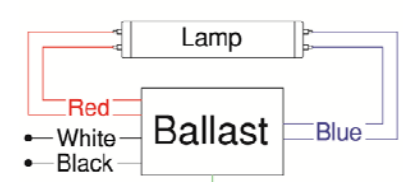
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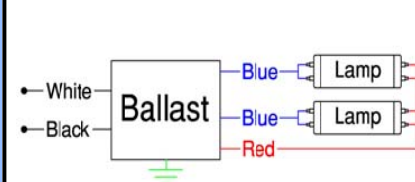
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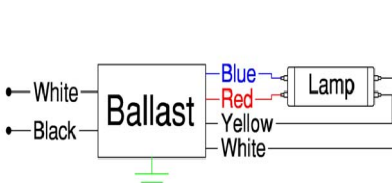
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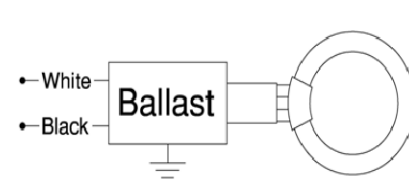
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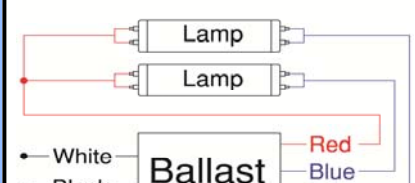
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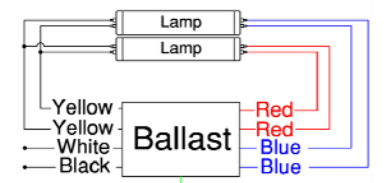
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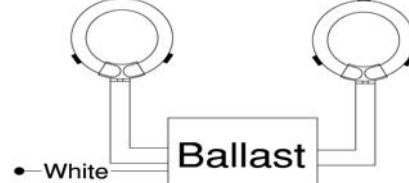
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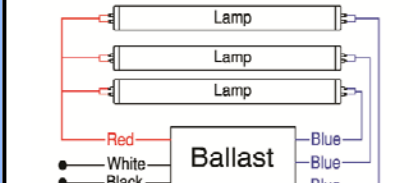
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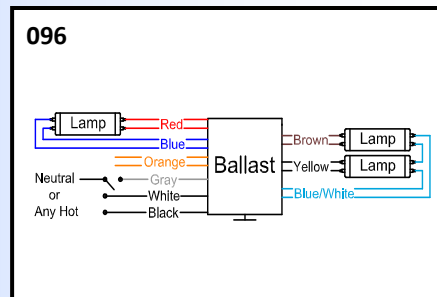
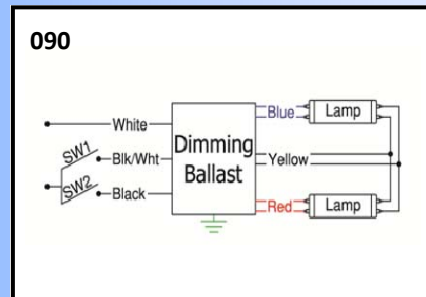
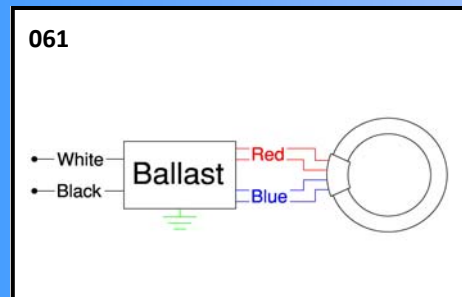
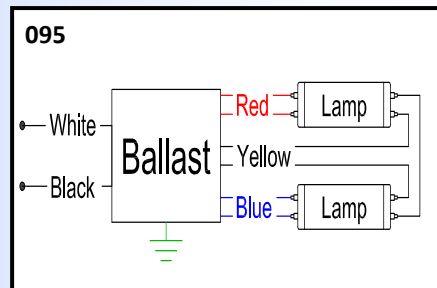
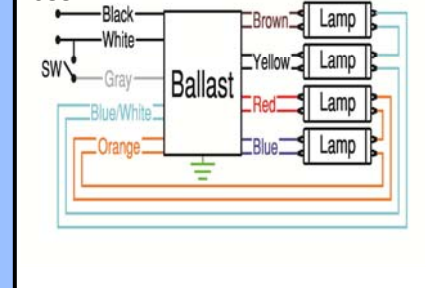
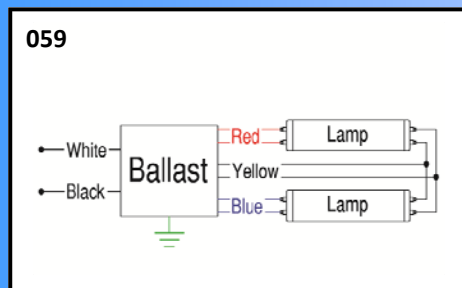
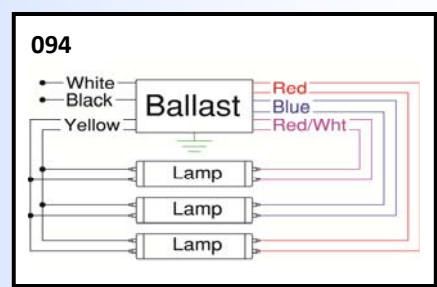
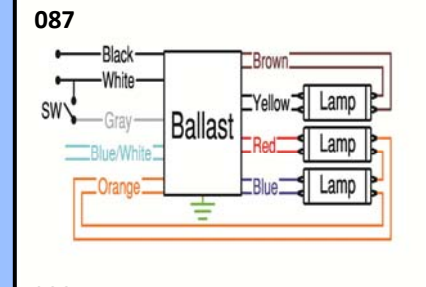
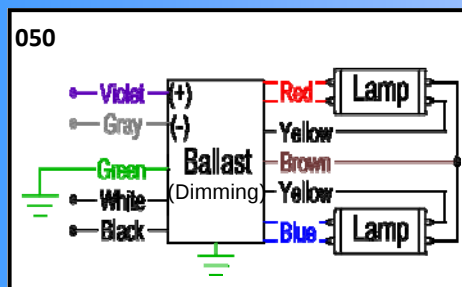
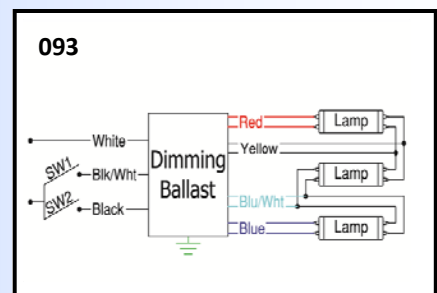
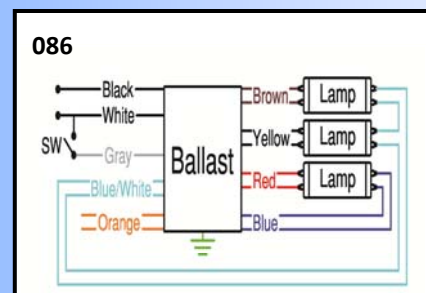
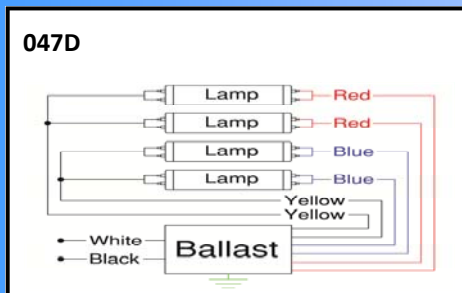
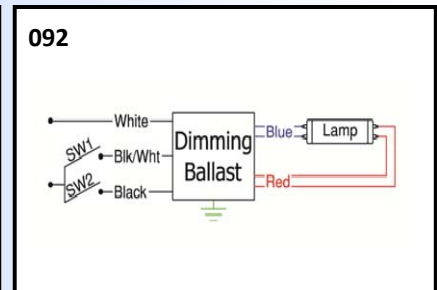
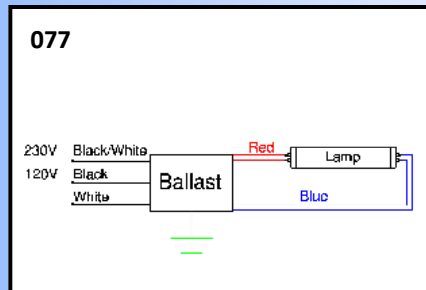
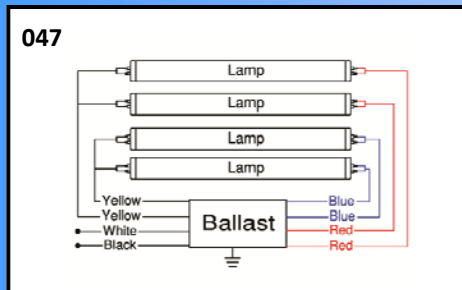
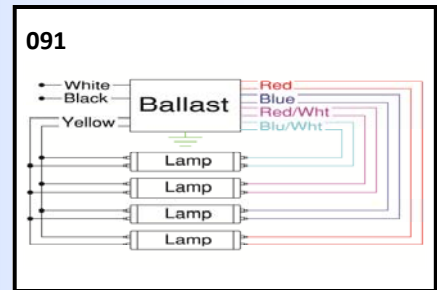
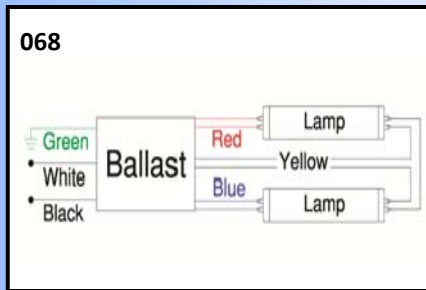
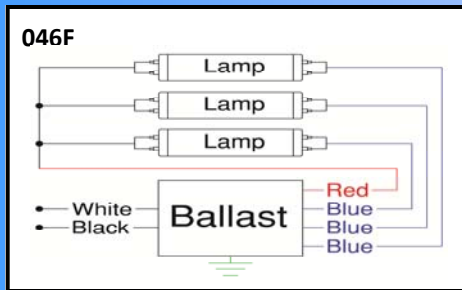
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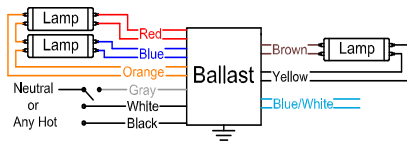


BALLAST WIRING DIAGRAMS

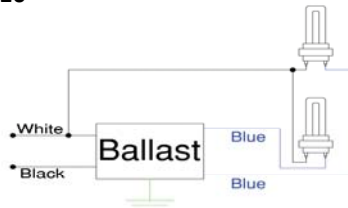


BALLAST WIRING DIAGRAMS

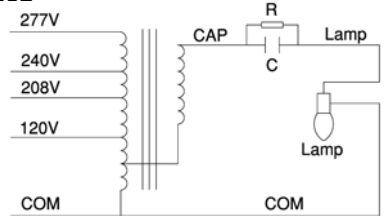
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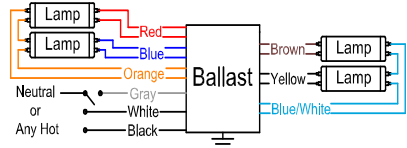
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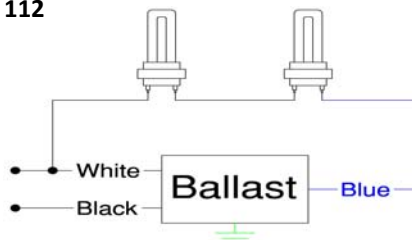
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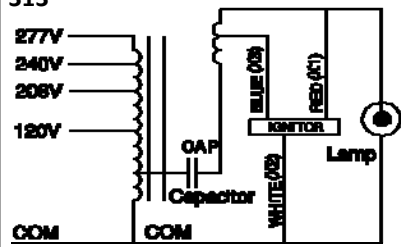
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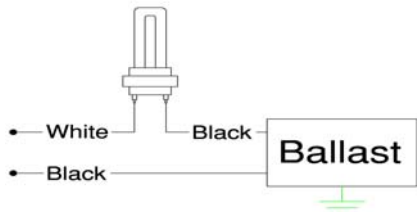
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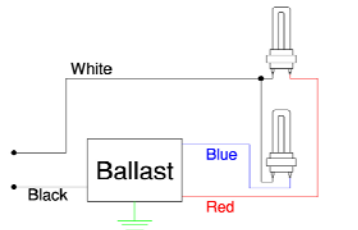
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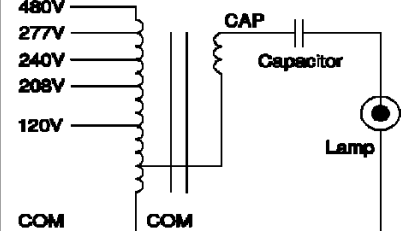
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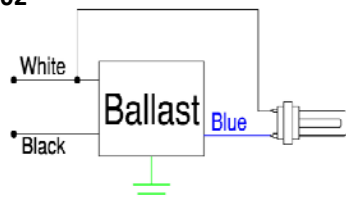
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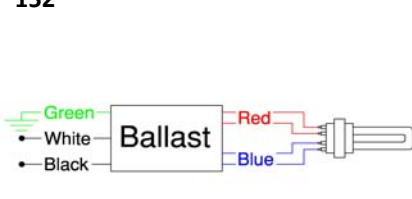
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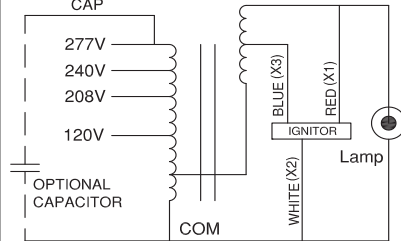
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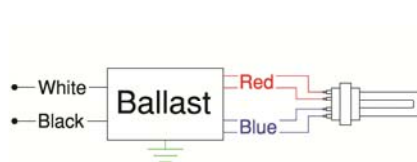
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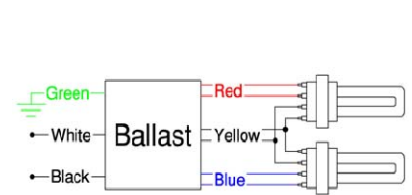
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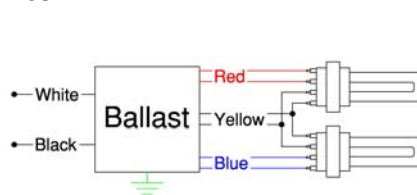
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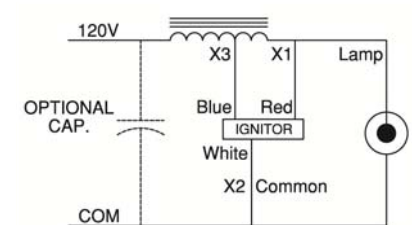
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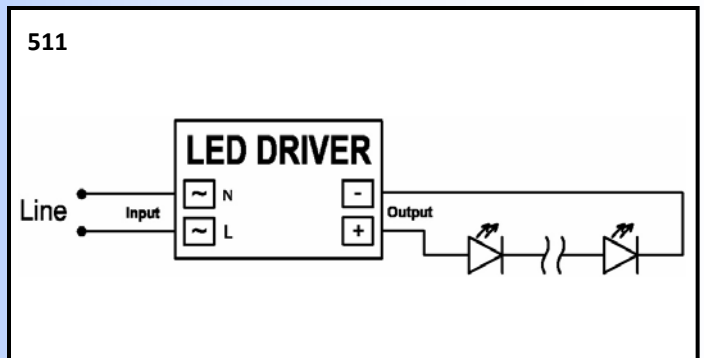
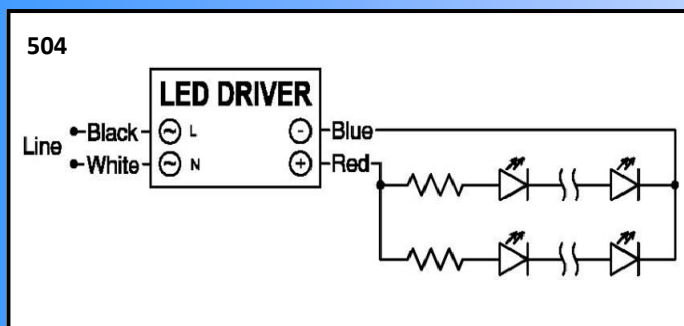
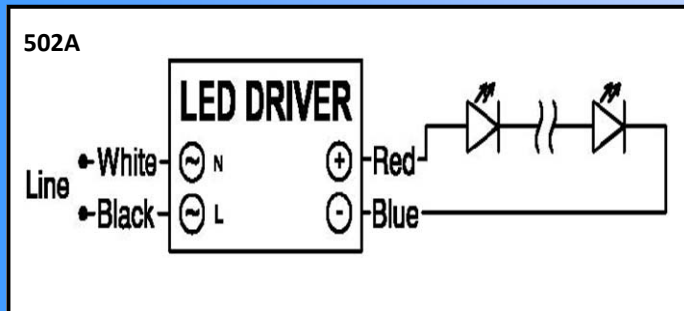
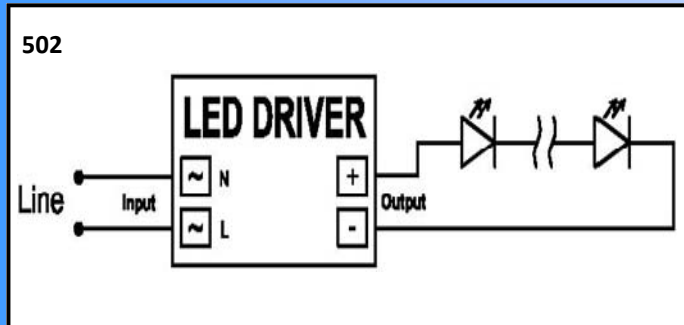
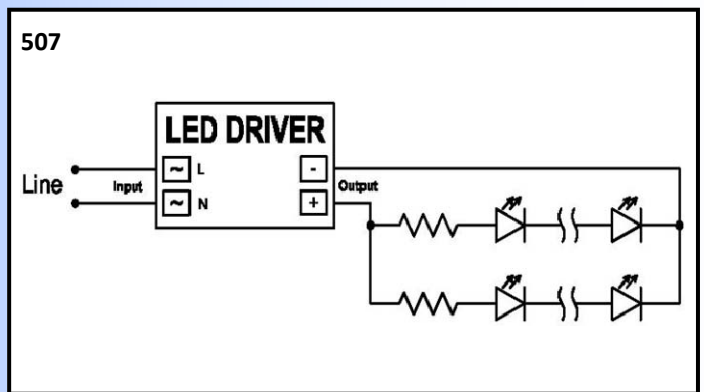
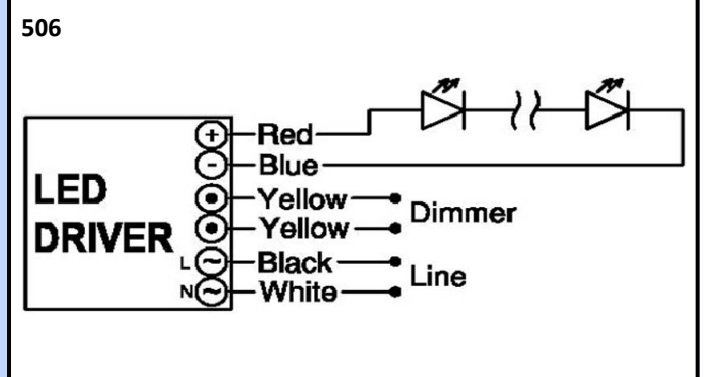
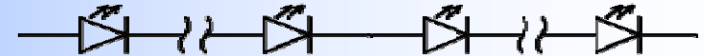
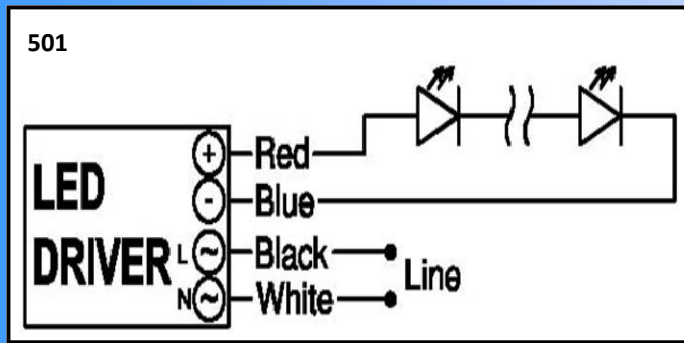
108



301



LED DRIVER WIRING DIAGRAMS



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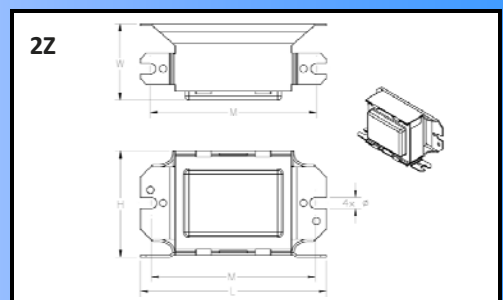
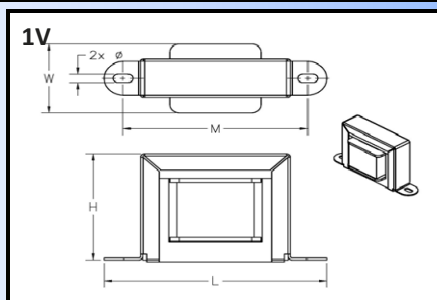
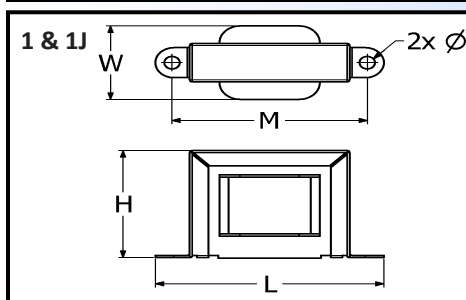
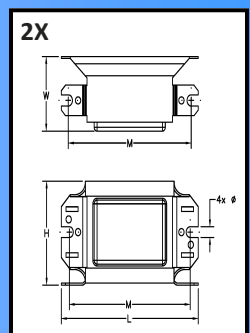
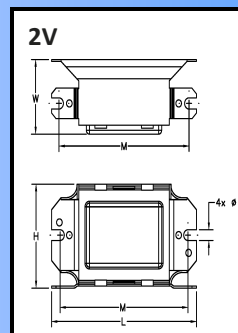
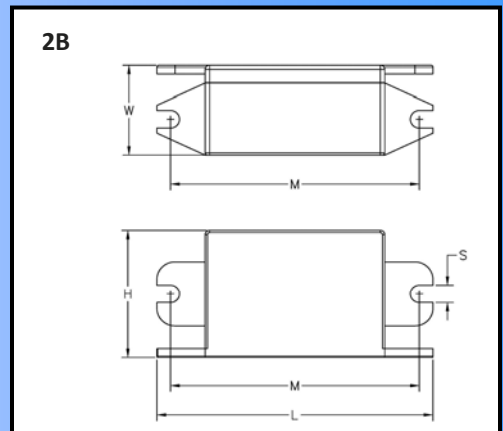
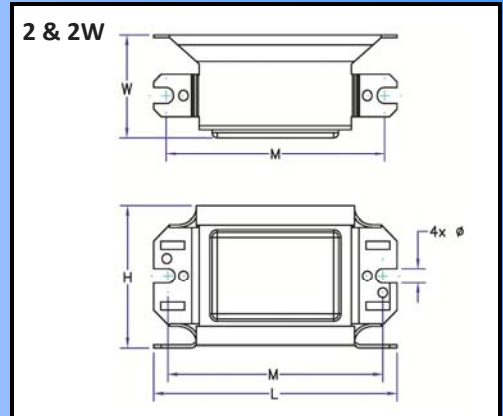
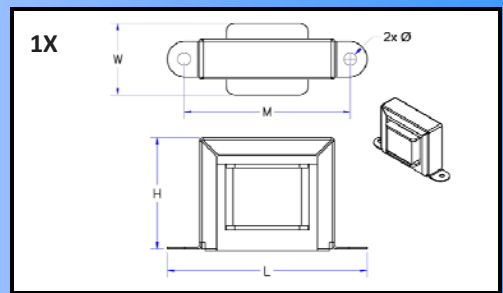
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CASE STYLE DIMENSIONS

Case	H	W	L	M	S
1	1 5/8	1 9/32	2 13/16	2 3/8	3/16
	1.63	1.28	2.81	2.38	0.19
	4.13 cm	3.18 cm	7.14 cm	6.03 cm	0.47 cm
1J	1 21/32	1 5/16	2 13/16	2 3/8	3/16
	1.66	1.31	2.81	2.38	0.19
	4.22 cm	3.33 cm	7.14 cm	6.03 cm	0.47 cm
1V	1 21/32	1 1/16	2 13/16	2 3/8	1/8
	1.66	1.06	2.81	2.38	0.13
	4.22 cm	2.70 cm	7.14 cm	6.03 cm	0.32 cm
1X	1 15/16	1 1/2	3 1/4	2 13/16	3/16
	1.94	1.50	3.25	2.81	0.19
	4.93 cm	3.81 cm	8.26 cm	7.14 cm	0.47 cm
2	1 23/32	1 1/4	3 1/16	2 3/4	3/16
	1.72	1.25	3.06	2.75	0.19
	4.34	3.18 cm	7.77 cm	6.99 cm	0.47 cm
2B	1 1/2	1 1/16	3 1/16	2 3/4	3/16
	1.50	1.06	3.06	2.75	0.19
	3.81 cm	2.70 cm	7.77 cm	6.99 cm	0.47 cm
2V	1 23/32	1 1/4	3 1/16	2 3/4	3/16
	1.72	1.25	3.06	2.75	0.19
	4.34	3.18 cm	7.77 cm	6.99 cm	0.47 cm
2W	1 9/16	1 3/16	2 3/4	2 9/16	3/16
	1.56	1.19	2.75	2.56	0.19
	3.97 cm	3.02 cm	6.99 cm	6.51 cm	0.47 cm
2X	1 21/32	1 3/8	3 1/16	2 3/4	3/16
	1.66	1.38	3.06	2.75	0.19
	4.22 cm	3.51 cm	7.77 cm	6.99 cm	0.47 cm
2Z	29/32	1 5/32	5 1/4	5	3/16
	0.91	1.16	5.25	5.00	0.19
	2.31 cm	2.95 cm	13.34 cm	12.70 cm	0.47 cm

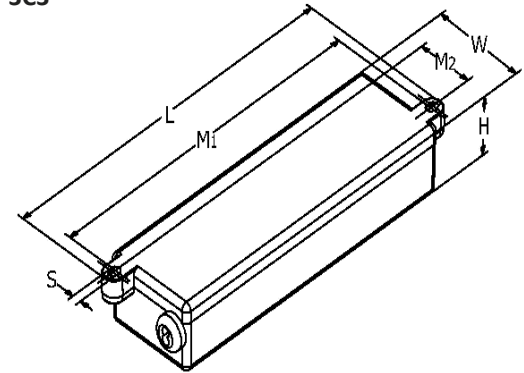


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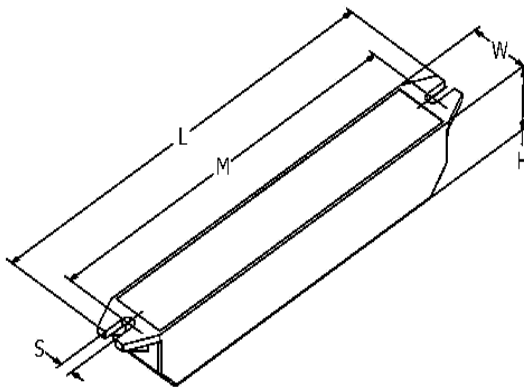
CASE STYLE DIMENSIONS

Case	H	W	L	M	M2	S
3	29/32	1 5/32	5 1/4	5	X	3/16
	0.91	1.16	5.25	5.00	X	0.19
	2.31 cm	2.95 cm	13.34 cm	12.70 cm	X	0.47 cm
3A	13/16	1 5/32	5 1/4	5	X	3/16
	0.81	1.16	5.25	5.00	X	0.19
	2.06 cm	2.95 cm	13.34 cm	12.70 cm	X	0.47 cm
3B	31/32	29/32	9	8 3/4	X	5/32
	0.97	0.91	9.00	8.75	X	0.16
	2.46 cm	2.31 cm	23.01 cm	22.23 cm	X	0.41 cm
3C	3/4	29/32	5 29/32	5 19/32	X	3/16
	0.75	0.91	5.91	5.59	X	0.19
	1.91 cm	2.31 cm	15.01 cm	14.20 cm	X	0.47 cm
3C3	13/16	1 5/16	4 7/8	4 17/32	25/32	1.8
	0.81	1.31	4.88	4.53	0.78	0.13
	2.06 cm	3.33 cm	12.38 cm	11.51 cm	1.98 cm	0.32 cm
3D	3/4	3/16	5 23/32	5 1/8	X	5/32
	0.75	0.19	5.72	5.13	X	0.16
	1.91 cm	0.47 cm	14.53 cm	15.03 cm	X	0.41 cm
3G	29/32	1 5/32	9 1/2	8 15/16	X	9/32
	0.91	1.16	9.50	8.94	X	0.28
	2.31 cm	2.95 cm	24.13 cm	22.71 cm	X	0.71 cm
3G1	27/32	1 3/16	9 1/4	8 5/8	9/16	3/16
	0.84	1.19	9.25	8.63	0.57	0.19
	2.14 cm	3.02 cm	23.50 cm	21.91 cm	1.43 cm	0.47 cm

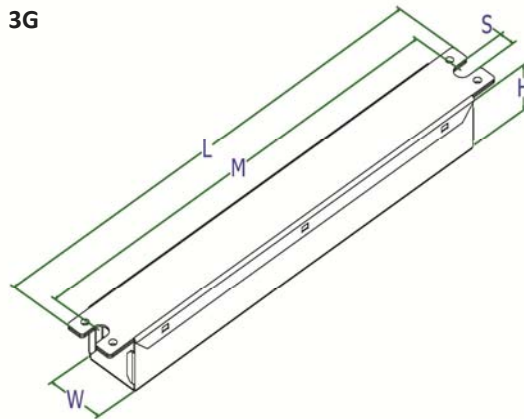
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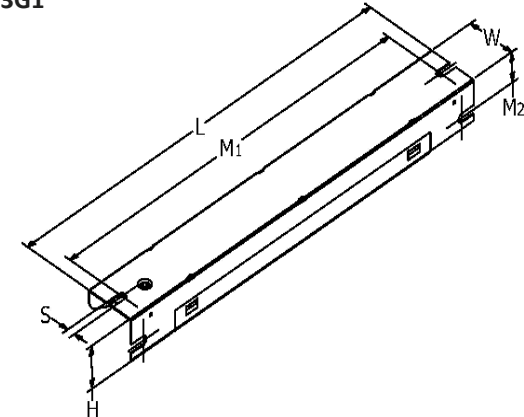
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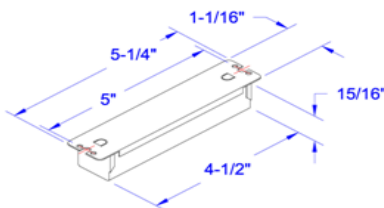
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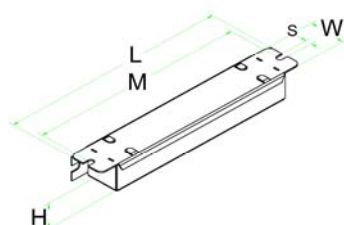
3G1



3 & 3A

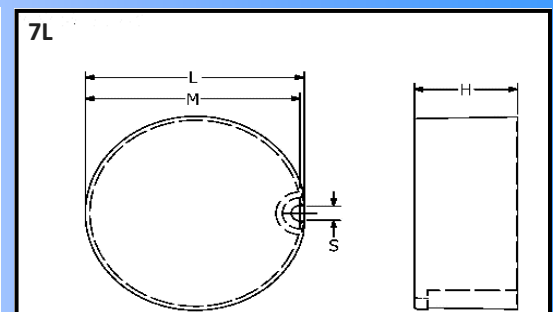
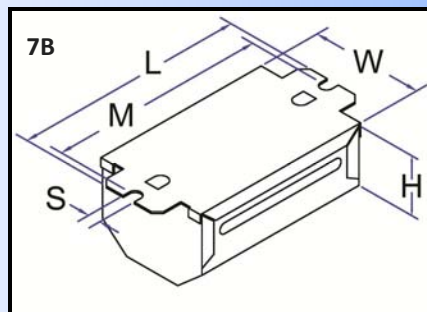
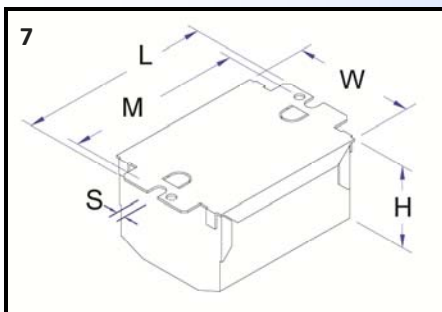
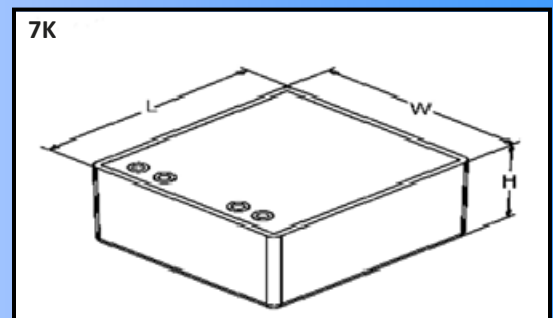
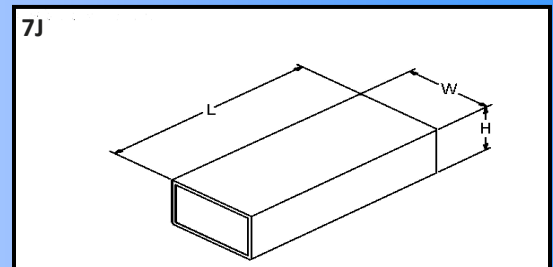
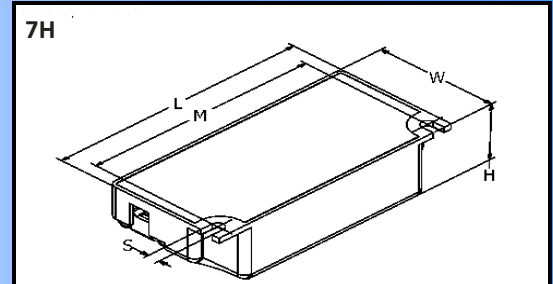
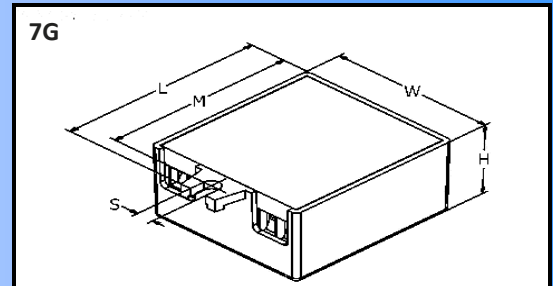
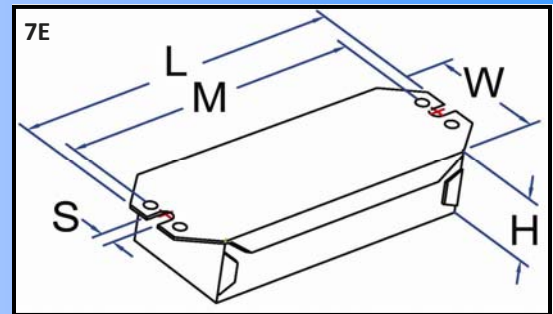


3B & 3C



CASE STYLE DIMENSIONS

Case	H	W	L	M	S
7	1 7/16	1 7/8	3	2 3/4	3/16
	1.44	1.88	3.00	2.75	0.19
	3.66 cm	4.78 cm	7.62 cm	6.99 cm	0.47 cm
7B	1 7/16	1 15/16	4	3 3/4	7/32
	1.44	1.94	4.00	3.75	0.22
	3.66 cm	4.93 cm	10.16 cm	9.53 cm	0.56 cm
7E	1 3/16	1 7/8	4	3 19/32	7/32
	1.19	1.88	4.00	3.59	0.22
	3.02 cm	4.78 cm	10.16 cm	9.12 cm	0.56 cm
7G	25/32	1 17/32	1 29/32	1 25/32	5/32
	0.78	1.53	1.91	1.78	0.16
	1.98 cm	3.89 cm	4.85 cm	4.52 cm	0.41 cm
7H	7/8	1 19/32	3 11/32	3	5/32
	0.87	1.59	3.34	3.00	0.16
	2.22 cm	4.04 cm	8.50 cm	7.63 cm	0.41 cm
7J	13/16	1 9/32	2 11/16	x	x
	0.81	1.28	2.69	x	x
	2.06 cm	3.25 cm	6.83 cm	x	x
7K	25/32	1 1/2	1 5/8	x	x
	0.78	1.50	1.63	x	x
	1.98 cm	3.81 cm	4.13 cm	x	x
7L	25/32	x	1 11/16	1 21/32	1 1/8
	0.78	x	1.69	1.66	1.13
	2.00 cm	x	4.29 cm	4.21 cm	2.86 cm

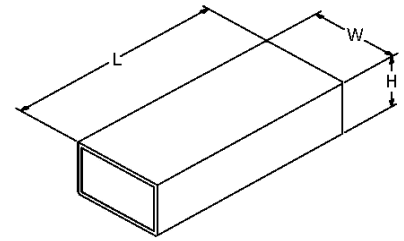


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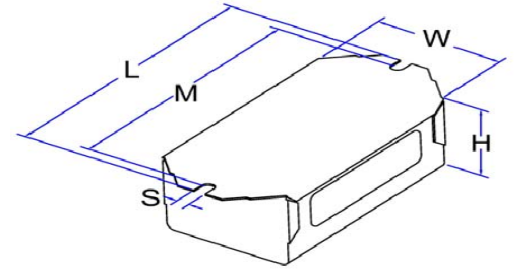
CASE STYLE DIMENSIONS

Case	H	W	L	M	S
7M	5/8	1 19/32	2 7/8	2 25/32	5/32
	0.63	1.59	2.88	2.78	0.16
	1.59 cm	4.05 cm	7.30 cm	7.06 cm	0.40 cm
7N	7/8	x	2 3/16	2 1/16	1/8
	0.88	x	2.19	2.06	0.13
	2.22 cm	x	5.56 cm	5.24 cm	0.32 cm
7R	13/16	1 11/32	3 5/32	x	x
	0.81	1.34	3.16	x	x
	2.06 cm	3.41 cm	8.02 cm	x	x
8	1 5/8	2 3/16	4 3/4	4 3/8	7/32
	1.63	2.19	4.75	4.38	0.22
	4.14 cm	5.56 cm	12.07 cm	11.13 cm	0.56 cm
9	1 13/32	1 29/32	6 7/16	6	1/4
	1.41	1.91	6.44	6.00	0.25
	3.58 cm	4.85 cm	16.36 cm	15.24 cm	0.64 cm
9W	1 1/32	1 7/8	6 15/32	6	9/32
	1.03	1.88	6.47	6.00	0.28
	2.62 cm	4.78 cm	16.43 cm	15.24 cm	0.71 cm
9W2	1	1 3/8	6 15/32	6	9/32
	1.00	1.38	6.47	6.00	0.28
	2.54 cm	3.49 cm	16.43 cm	15.24 cm	0.71 cm
9W3	23/32	1 13/16	7	6 11/16	5/32
	0.72	1.81	7.00	6.69	0.16
	1.83 cm	4.60 cm	17.78 cm	16.99 cm	0.40 cm

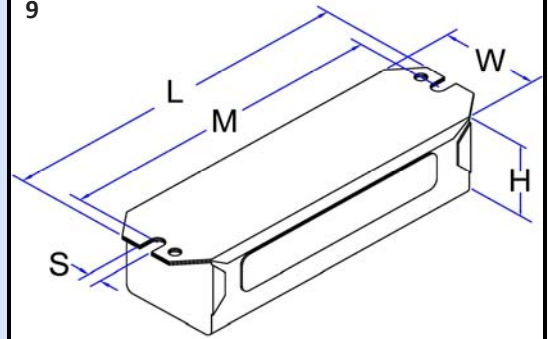
7R



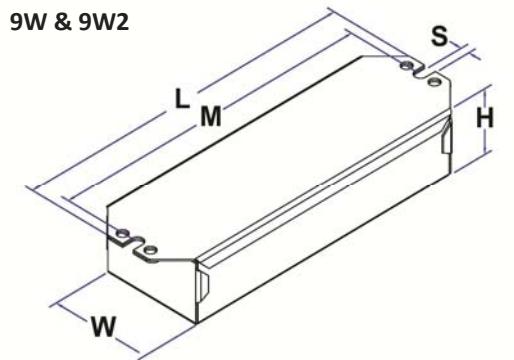
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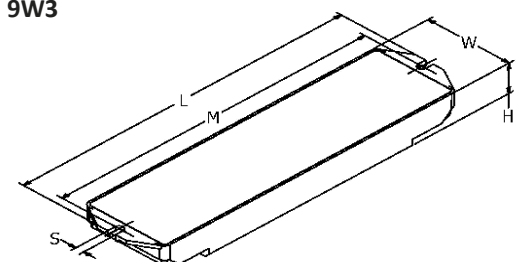
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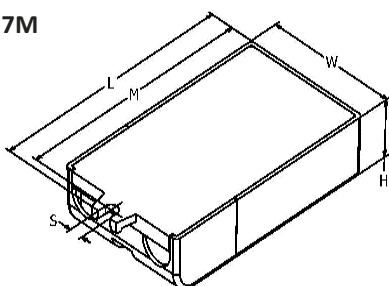
9W & 9W2



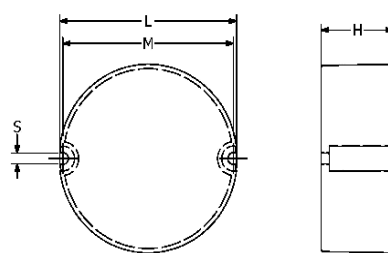
9W3



7M



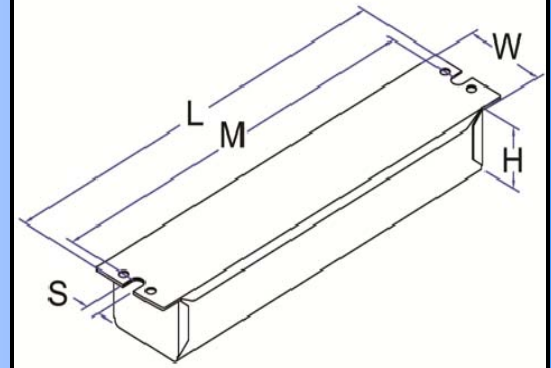
7N



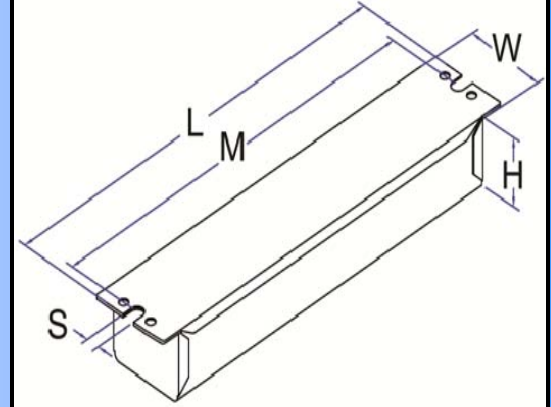
CASE STYLE DIMENSIONS

Case	H	W	L	M	S
11B	1 1/16	2 5/16	9 7/16	8 7/8	5/16
	1.06	2.31	9.44	8.88	0.31
	2.69 cm	5.87 cm	23.98 cm	22.56 cm	0.79 cm
12	1 7/16	1 7/8	9 7/16	8 7/8	5/16
	1.44	1.88	9.44	8.88	0.31
	3.66	4.78 cm	23.98 cm	22.56 cm	0.79 cm
12A	1 5/32	1 11/16	9 1/2	8 15/16	9/32
	1.16	1.69	9.50	8.94	0.28
	2.95 cm	4.29 cm	24.13 cm	22.71 cm	0.71 cm
12B	1 5/32	1 3/8	9 7/16	8 7/8	9/32
	1.16	1.38	9.44	8.88	0.28
	2.95 cm	3.51 cm	23.98 cm	22.56 cm	0.71 cm
12C	1 3/8	1 13/16	9 7/16	8 7/8	1/4
	1.38	1.81	9.44	8.88	0.25
	3.51 cm	4.60 cm	23.98 cm	22.56 cm	0.64 cm
12D	1 1/16	1 3/8	9 7/16	8 7/8	9/32
	1.06	1.38	9.44	8.88	0.28
	2.69 cm	3.51 cm	23.98 cm	22.56 cm	0.71 cm
15	1 13/16	3 3/32	11 11/16	11 1/4	5/16
	1.81	3.09	11.69	11.25	0.31
	4.60 cm	7.85 cm	29.69 cm	28.58 cm	0.79 cm
15A	1 19/32	2 7/32	11 13/16	11 3/16	9/32
	1.59	2.22	11.81	11.19	0.28
	4.04 cm	5.64 cm	30.00 cm	28.42 cm	0.71 cm
19	1	1 5/32	14 1/4	13 3/4	3/16
	1.00	1.16	14.25	13.75	0.19
	2.54 cm	2.95 cm	36.20 cm	34.93 cm	0.47 cm
23	1 1/8	1 5/32	16 1/2	16	3/16
	1.13	1.16	16.50	16.00	0.19
	2.87 cm	2.95 cm	41.91 cm	40.64 cm	0.47 cm

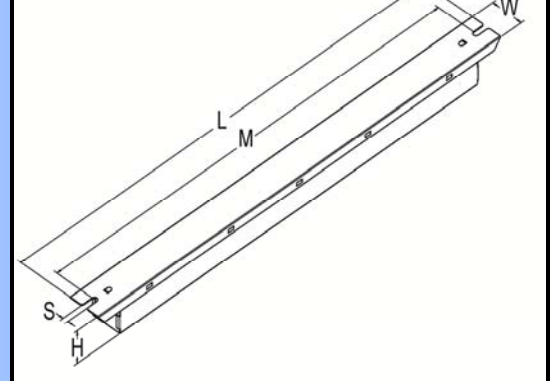
11B, 12, 12A, 12B, 12C & 12D



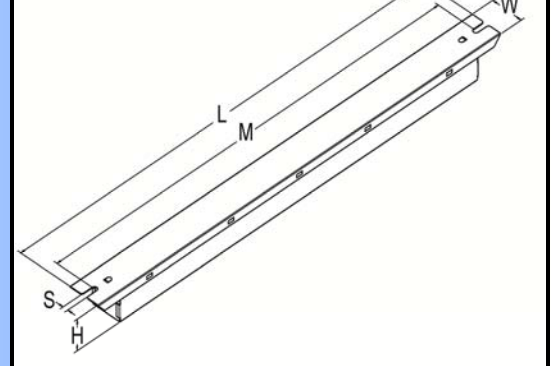
15 & 15A



19



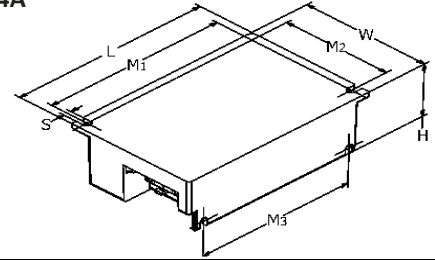
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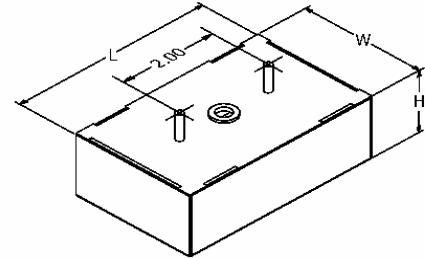
CASE STYLE DIMENSIONS

Case	H	W	L	M	S
23B/ 23C	1 1/32	1 7/32	16 15/16	16 1/4	3/16
	1.03	1.22	16.94	16.25	0.19
	2.62 cm	3.10 cm	43.02 cm	41.28 cm	0.47 cm
23D	1 1/16	1 5/16	18 1/2	17 3/4	5/16
	1.06	1.31	18.50	17.75	0.31
	3.69 cm	3.33 cm	46.99 cm	45.06 cm	0.79 cm
24	1 3/8	3	5	4 5/8	1/4
	1.38	3.00	5.00	4.63	0.25
	3.51 cm	7.62 cm	12.70 cm	11.76 cm	0.64 cm
24A	1 3/16	2 5/8	4 1/16	3 9/32	5/32
	1.19	2.63	4.06	3.28	0.16
	3.02 cm	6.68 cm	10.31 cm	8.33 cm	0.41 cm
24C	1 5/16	2 9/16	4 3/32	x	x
	1.31	2.56	4.09	x	x
	3.33 cm	6.51 cm	10.40 cm	x	x
24R	1 1/4	x	3 5/8	1 13/16	x
	1.25	x	3.63	1.81	x
	3.18 cm	x	9.21 cm	4.60 cm	x
27A	1 3/16	1 17/32	6 5/8	6 1/4	5/32
	1.19	1.53	6.63	6.25	0.16
	3.02 cm	3.89 cm	16.83 cm	15.88 cm	0.40 cm
28	1	2 3/8	5	4 5/8	3/16
	1.00	2.38	5.00	4.63	0.19
	2.54 cm	6.05 cm	12.70 cm	11.76 cm	0.47 cm
31	1 3/16	1 23/32	16 3/4	16 5/16	5/16
	1.19	1.72	16.75	16.31	0.31
	3.02 cm	4.37 cm	42.55 cm	41.43 cm	0.79 cm

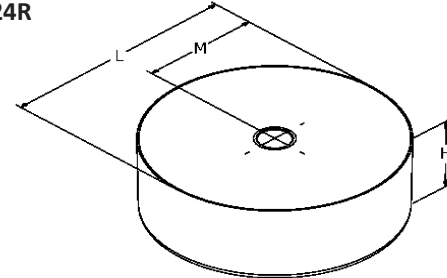
24A



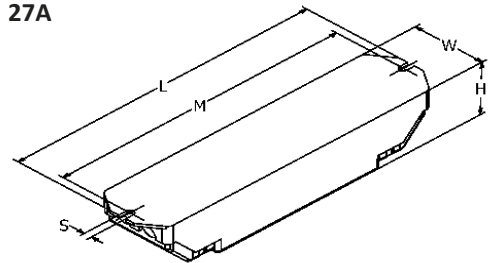
24C



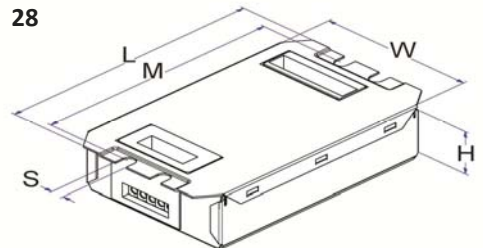
24R



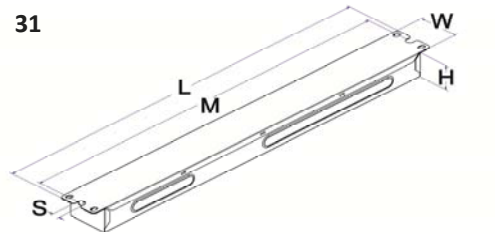
27A



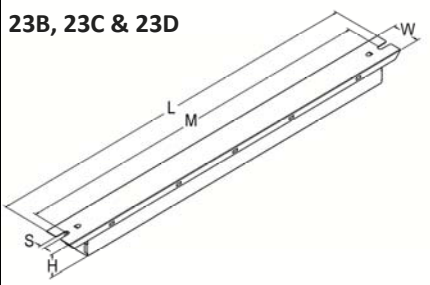
28



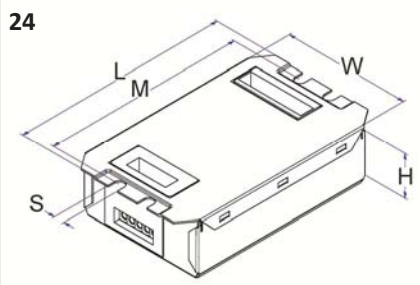
31



23B, 23C & 23D

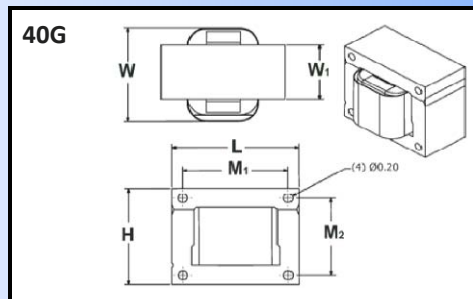
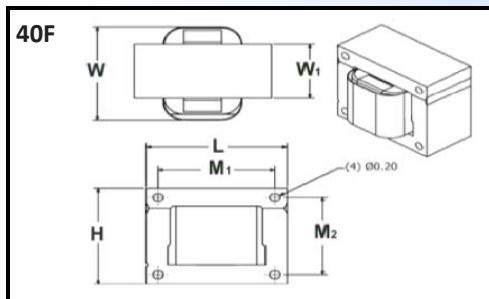
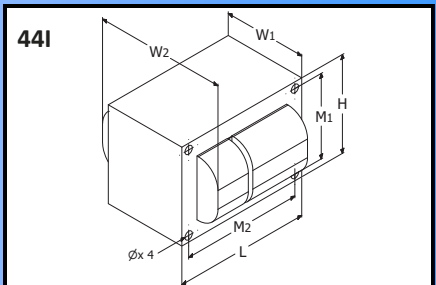
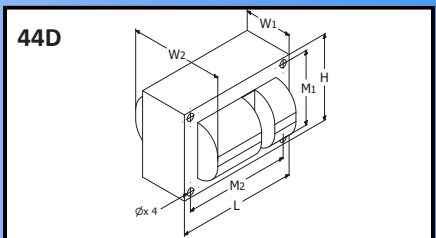
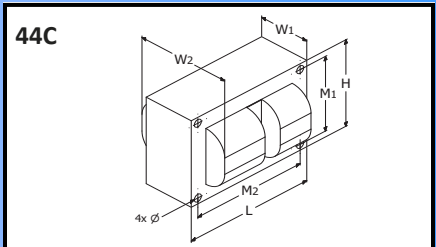
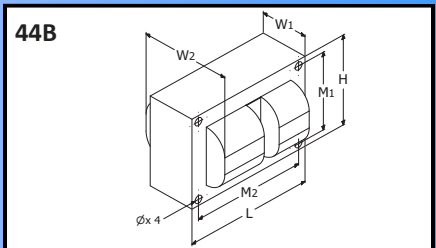
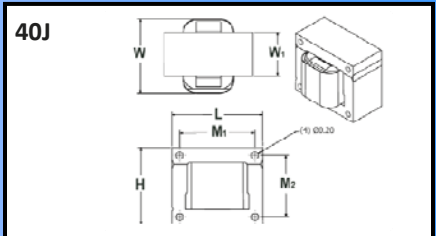
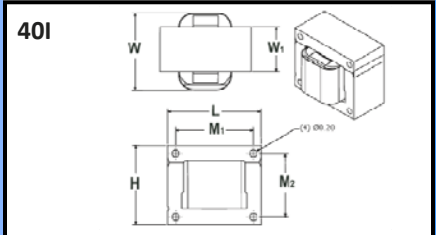
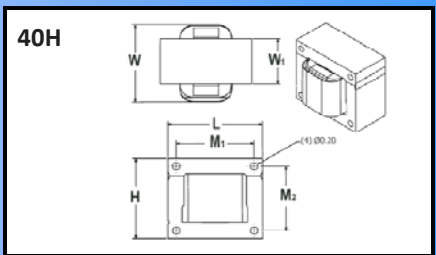


24



CASE STYLE DIMENSIONS

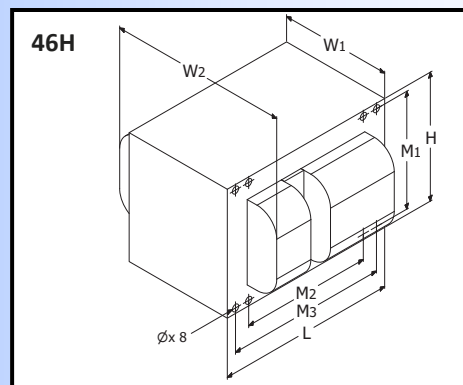
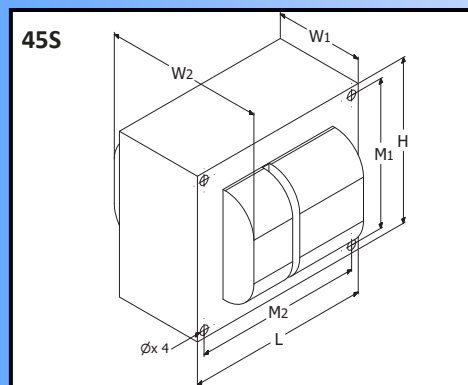
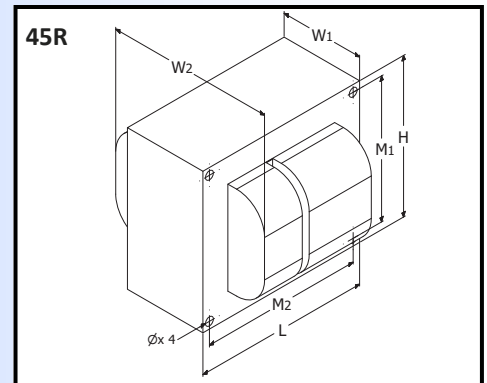
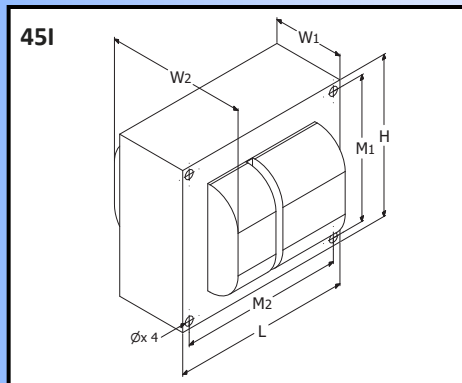
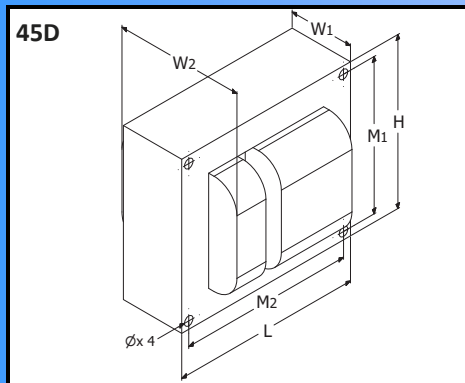
Case	H	W1	W2	L	M1	M2	Ø
40F	2 1/4	1 19/32	5/8	2 5/8	2 3/16	1 3/4	Cleared for #6 Thru-Bolt
	2.25	1.59	0.63	2.63	2.19	1.75	
	5.72 cm	4.04 cm	1.60 cm	6.68 cm	5.56 cm	4.45 cm	
40G	2 1/4	1 13/16	27/32	2 5/8	2 3/16	1 3/4	Cleared for #6 Thru-Bolt
	2.25	1.81	0.84	2.63	2.19	1.75	
	5.72 cm	4.60 cm	2.13 cm	6.68 cm	5.56 cm	4.45 cm	
40H	2 1/4	2 1/4	1 1/8	2 5/8	2 3/16	1 3/4	Cleared for #6 Thru-Bolt
	2.25	2.25	1.30	2.63	2.19	1.75	
	5.72 cm	5.72 cm	3.30 cm	6.68 cm	5.56 cm	4.45 cm	
40I	2 1/4	2 23/32	1 9/16	2 5/8	2 3/16	1 3/4	Cleared for #6 Thru-Bolt
	2.25	2.72	1.56	2.63	2.19	1.75	
	5.72 cm	6.91 cm	3.96 cm	6.68 cm	5.56 cm	4.45 cm	
40J	2 1/4	3 13/32	2 3/32	2 5/8	2 3/16	1 3/4	Cleared for #6 Thru-Bolt
	2.25	3.41	2.09	2.63	2.19	1.75	
	5.72 cm	8.66 cm	5.31 cm	6.68 cm	5.56 cm	4.45 cm	
44B	2 13/16	1 15/32	2 3/4	3 15/16	2 7/16	3 1/2	Cleared for #10 Thru-Bolt
	2.81	1.47	2.75	3.94	2.44	3.50	
	7.14 cm	3.73	6.99 cm	10.01 cm	6.20 cm	8.89 cm	
44C	2 13/16	1 17/32	2 29/32	3 15/16	2 7/16	3 1/2	Cleared for #10 Thru-Bolt
	2.81	1.53	2.91	3.94	2.44	3.50	
	7.14 cm	3.89 cm	7.39 cm	10.01 cm	6.20 cm	8.89 cm	
44D	2 13/16	1 19/32	3 5/16	3 15/16	2 7/16	3 1/2	Cleared for #10 Thru-Bolt
	2.81	1.59	3.10	3.94	2.44	3.50	
	7.14 cm	4.04 cm	7.87 cm	10.01 cm	6.20 cm	8.89 cm	
44I	2 13/16	2 7/16	3 27/32	3 15/16	2 7/16	3 1/2	Cleared for #10 Thru-Bolt
	2.81	2.44	3.84	3.94	2.44	3.50	
	7.14 cm	6.20 cm	9.75 cm	10.01 cm	6.20 cm	8.89 cm	



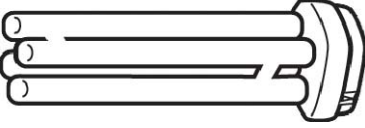
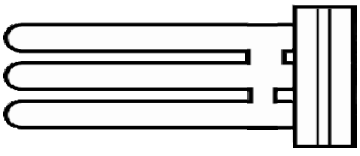
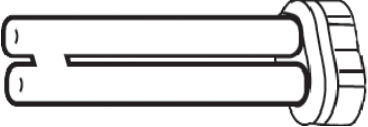
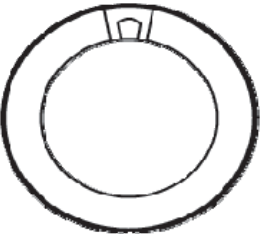
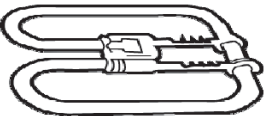
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CASE STYLE DIMENSIONS

Case	H	W1	W2	L	M1	M2	M3	Ø
45D	4 1/4	1 21/32	3 1/4	4 3/4	3 7/8	4 3/8	X	Cleared for #10 Thru-Bolt
	4.25	1.66	3.25	4.75	3.88	4.38	X	
	10.80 cm	4.22 cm	8.26 cm	12.07 cm	9.86 cm	11.13 cm	X	
45I	4 1/4	1 29/32	3 3/4	4 3/4	3 7/8	4 3/8	X	Cleared for #10 Thru-Bolt
	4.25	1.91	3.75	4.75	3.88	4.38	X	
	10.80 cm	4.85 cm	9.53 cm	12.07 cm	9.86 cm	11.13 cm	X	
45R	4 1/4	2 5/16	4 17/32	4 3/4	3 7/8	4 3/8	X	Cleared for #10 Thru-Bolt
	4.25	2.31	4.53	4.75	3.88	4.38	X	
	10.80 cm	5.87 cm	11.51 cm	12.07 cm	9.86 cm	11.13 cm	X	
45S	4 1/4	2 5/16	4 5/32	4 3/4	3 7/8	4 3/8	X	Cleared for #10 Thru-Bolt
	4.25	2.31	4.16	4.75	3.88	4.38	X	
	10.80 cm	5.87 cm	10.66 cm	12.07 cm	9.86 cm	11.13 cm	x	
46H	4 1/4	3 3/4	6	6	3 7/8	4 3/8	5 3/8	Cleared for #10 Thru-Bolt
	4.25	3.75	6.00	6.00	3.88	4.38	5.38	
	10.80 cm	9.53 cm	15.24 cm	15.24 cm	9.86	11.13 cm	13.67 cm	



LAMP REFERENCE GUIDE

Name	Picture Representation	Lamp/Socket Designation
Recessed Double Contact Linear Lamp		T8HO, T12HO, T14 1/2 HO
Medium Bipin Linear Lamp		T5, T8, T10, T12
Single Pin Linear Lamp		T6, T8, T12
CFQ 4-Pin Quad Tube Lamp		CFQ13W/G24q CFQ18W/G24q CFQ26W/G24q
CFTR or CFM 4-Pin Triple Tube Lamp		CFTR13W/GX24q CFTR18W/GX24q CFTR26W/GX24q CFTR32W/GX24q CFTR42W/GX24q CFM57W/GX24q
CFT 4-Pin Twin Tube Lamp		CFT5W/2GX7 CFT7W/2GX7 CFT9W/2GX7 CFT13W/2GX7
FT 4-Pin Long Twin Tube (T5) Lamp		FT18W/2G11 FT24W/2G11 FT36W/2G11 FT18W/2G11/RS FT40W/2G11/RS FT50W/2G11/RS FT55W/2G11/RS
FC Circular Lamp		FC9T5 (22W) FC12T5 (40W) FC12T5HO (55W) FC6T9 (20W) FC8T9 (22W) FC12T9 (32W) FC16T9 (40W)
CFS Square 2-D Lamp		CFS10W/GR10q CFS16W/GR10q CFS21W/GR10q CFS28W/GR10q
CFT 2-Pin Twin Tube Lamp		CFT5W/G23 CFT7W/G23 CFT9W/G23 CFT13W/GX23
CFQ 2-Pin Quad Tube Lamp		CFQ9W/G23 CFQ13W/GX23 CFQ13W/G24d CFQ18W/G24d CFQ26W/G24d

CROSS REFERENCE

* Robertson Worldwide cannot guarantee 100% match among other manufacturers. To ensure product accuracy or compare product data sheets to the model being replaced, please visit our website at www.robertsonww.com to view complete specification pages.

For a complete listing of our Cross Reference, please visit the Customer Support Menu Item at www.robertsonww.com. It's simple: Just plug in the manufacturer's model number and click "GO". The Robertson Replacement model will appear on your screen.

Because Robertson Worldwide is noted particularly for its ability to customize, only industry standardized parts are listed below. Items not listed in the cross reference are unique products to Robertson and should not be replaced with products from another manufacturer.

Advance	GE	Osram	Universal	Robertson Model Number	Description
71A7971	GERB07SOH	LU70/MULTI-KIT	NO CROSS	ALU0070H04912	S62-70W, Pulse Start HID, High Power Factor, 120-277V, 60 Hz.
71A5292	NO CROSS	M70/MULTI-KIT	NO CROSS	AMH0070H04912	M98-70W, Pulse Start HID, High Power Factor, 120-277V, 60 Hz.
71A5390	NO CROSS	M100/MULTI-KIT	NO CROSS	AMH0100H04912	M90-100W, Pulse Start HID, High Power Factor, 120-277V, 60 Hz.
71A7707	NO CROSS	LU35/120R	1233-25IU	BLU0035A04900	1x35W, S76, High Pressure Sodium, R-NPF, 120V, 60 Hz. Kit
71A7807	NO CROSS	LU50/120R	1233-25IU	BLU0050A04900	1x50W, S68, High Pressure Sodium, R-NPF, 120V, 60 Hz. Kit
NO CROSS	NO CROSS	NO CROSS	NO CROSS	BLU0050A05100	1x50W, S68, High Pressure Sodium, R-NPF, 120V, 60 Hz., No Bracket, Kit
NO CROSS	NO CROSS	NO CROSS	NO CROSS	BLU0050A05200	1x50W, S68, High Pressure Sodium, R-NPF, 120V, 60 Hz., Welded Bracket, Kit
71A7907	1233142U0001	LU70/120R	1233142U0001	BLU0070A04900	1x70W, S62, High Pressure Sodium, R-NPF, 120V, 60 Hz. Kit
71A8007	NO CROSS	LU100/2120R	123310U001	BLU0100A04900	1x100W, S54, High Pressure Sodium, R-NPF, 120V, 60 Hz. Kit
71A8107	1233154U001	LU150/120R	1233154U001	BLU0150A04900	1x150W, S55, High Pressure Sodium, R-NPF, 120V, 60 Hz. Kit
71A8493	NO CROSS	LU400/MULTI-KIT	NO CROSS	CLU0400H04912	S52-1000W Pulse Start HID, High Power Factor, 120-277 V, 60 Hz.
71A8773	GERB01SOA	LU1000/MULTI-KIT	NO CROSS	CLU1000H04913	S52-1000W Pulse Start HID, High Power Factor, 120-277 V, 60 Hz.
71A5560/ 71A5590	GERB17MOA	M175/MULTI-KIT	NO CROSS	CMH0175H04932	M57-175W Pulse Start HID, High Power Factor, 120-277 V, 60 Hz.
71A5770	NO CROSS	M250/MULTI-KIT	NO CROSS	CMH0250H04932	M58-250W Pulse Start HID, High Power Factor, 120-277 V, 60 Hz.
71A6092	NO CROSS	M400/MULTI-PS-KIT	NO CROSS	CMH0400H04912	M155-400W Pulse Start HID, High Power Factor, 120-277 V, 60 Hz.
REL3P32SC	GE332120N	QT3X32T8120ISNSC	B332I120RHA	IEL332T8120	3/2xF13T8-F32T8, Instant Start HPF, 120V Ballast
REL4P32SC	GE432120N	QT4X32T8120ISNSC	B432I120RHA	IEL432T8120	4/3xF17T8-F32T8, Instant Start, HPF, 120V Ballast
REL2P32SC	GE232120N	QT2X32T8/ 120ISNSC	B232I120RHA	IEU232T8120	2/1xF17T8-F32T8, Instant Start, HPF, 120V Ballast
IOPA2P32SC	GE232MAXN ULTRA	QHE1X32T8UNVISNSC	B232IUNVHEA	ISA232T8HEMV	2/1xF17T8-F32T8, Instant Start, HPF, 120V thru 277V NEMA Premium Ballast

CROSS REFERENCE

Advance	GE	Osram	Universal	Robertson Model Number	Description
IOPA2P32HLSC	GE232MAXH ULTRA	QHE2X32T8UN-V1SHSC	B232IUNVHEH-A	ISA232T8HEMVH	2/1xF17T8-F32T8, Instant Start, HPF, High Efficiency, 120 thru 277V Ballast
IOPA2P32LWSC	GE232MAXL ULTRA	QHE2X32T8UNVISLSC	B232IUNVELA	ISA232T8HEMVL	2/1xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (LBF)
IOPA3P32SC	GE332MAXN ULTRA	QHE3X32T8UNVISNSC	B332IUNVHEA	ISA332T8HEMV	3/2xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (NBF)
NO CROSS	GE332MAXH ULTRA	QHE3X32T8UN-V1SHSC	B332IUNVHEHA	ISA332T8HEMVH	2/1xF17T8-F32T8, Instant Start, HPF, High Efficiency, 120 thru 277V Ballast
IOPA3P3LWSC	GE332MAXN ULTRA	QHE3X32T8UNVISLSC	B332IUNVELA	ISA332T8HEMVL	3/2xF17T8-F32T8, Instant Start, HPF, 120V thru 277V NEMA Premium Ballast
IOPA3P32SC	GE432MAXN ULTRA	QHE4X32T8UNVISNSC	B432IUNVHEA	ISA432T8HEMV	4/2xF32T8, Instant Start, HPF, 120V thru 277V NEMA Premium Ballast
IOPS4P32LWSC	GE432MAXN ULTRA	QHE4X32T8UNVISLSC	B432IUNVELA	ISA432T8HEMVL	4/2xF32T8, Instant Start, HPF, 120V thru 277V NEMA Premium Ballast
R2E75STP ICN2P60SC	GE260ISMVN	QT2X96120IS	B260IUNVHP	ISD296T12MVIP	2/1xF96T12, Instant Start, HPF, 120V thru 277V Ballast
REB4P32N	GE432120RES	QTR4X32T8 120ISNSC	B432I120RESA	ISL432T8120	4/3xF32T8, Instant Start, NPF, 120V Ballast
IOP-259-SC	GE259MVN	QHE2X59T8UNVISNSC	B259IUNVHPA	ISR259T8MVW	2/1x96T8, Instant Start, HPF, 120V thru 277V Ballast
IOPA2P32HLSC	GE232MAXH ULTRA	QHE2X32T8UNV1SHSC	B232IUNVHEH-A	ISS232T8HEMVH	2/1xF17T8-F32T8, Instant Start, HPF, High Efficiency, 120 thru 277V Ballast
IOPA3P32SC	GE332MAXN ULTRA	QHE3X32T8UNVISNSC	B332IUNVHEA	ISS332T8HEMV	3/2xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (NBF)
IOPA3P32HLSC	GE332MAXH ULTRA	QHE3X32T8UNVISHSC	B332IUNVHEHA	ISS332T8HEMVH	3/2xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (HBF)
IOPA3P32LWSC	GE332MAXL ULTRA	QHE3X32T8UNVISLSC	B332IUNVEL-A	ISS332T8HEMVL	3/2xF17T8-F32T8, HPF, High Efficiency, 120-277V Ballast
IOPS4P32LWSC	GE432MAXN ULTRA	QHE4X32T8UNVISLSC	B432IUNVELA	ISS432T8HEMV	4/3xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (NBF)
IOPA3P32SC	GE432MAXN ULTRA	QHE4X32T8UNVISNSC	B432IUNVHEA	ISS432T8HEMVL	4/3xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (LBF)
REB2P32N	GE232120RES	QT2X32T8120ISNSC	B232I120RESG	ISU232T8120	2/1xF17T8-F32T8, Instant Start, NPF, 120V Ballast
IOPA2P32SC	GE232MAXN ULTRA	QHE2X32T8UNVISNSC	B232IUNVHEA	ISU232T8HEMV	2/1xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (NBF)
IOPA2P32LWSC	GE232MAXL ULTRA	QHE2X32T8UNVISLSC	B232IUNVELA	ISU232T8HEMVL	2/1xF17T8-F32T8, Instant Start, HPF, 120V thru 277V, 50/60Hz., NEMA Premium Ballast (LBF)
IOP1S32SC	GE132MVPSN	QHE1X32T8UNVISNSC	B132IPUNVHPA	PSA132T8HEMV	1xF32T8, Program Start, HPF, 120V thru 277V, NEMA Premium Ballast
NO CROSS	GE132MVPSH	NO CROSS	B132PUNVHPA	PSA132T8HEMVH	1xF32T8, Program Start, HPF, 120V thru 277V, NEMA Premium Ballast

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CROSS REFERENCE

Advance	GE	Osram	Universal	Robertson Model Number	Description
IEZ2S24D	B239PUVDOG1C	QTP2X39	B224PUNVC	PSA224T5MV	2/1xF24T5HO, Program Start, HPF, 120V thru 277V, 50/60Hz., Ballast with Leads
ICN2S28N	GE228MVPSA	QT2X28120PS QT2X28277PS QTP2X28T5120PSNE QTP2X28T5277PSNE	B228PUNVC	PSA228T5MV	2/1xF14T5HE-F28T5HE, Program Start, HPF, 120V thru 277V, 50/60Hz., Ballast with Leads
RCN2S32SC IOP2S32SC	GE232MVPSN	QTP2X32T8UNVPSNTC	B232PUNVHEA B232PUNVHPA B232PUNVDRA	PSA232T8HEMV	2xF32T8, Program Start, HPF, 120V thru 277V NEMA Premium Ballast
NO CROSS	GE232MVPSH	QHE2X32T8UNVPSHHT	B232PUN-VDRHA	PSA232T8HEMVH	2xF32T8, Program Start, HPF, 120V thru 277V, NEMA Premium Ballast
ICN2S39	B239PUVDOG1C	QTP2X39-24T5HO/ UNVPSN	B239PUNVD	PSA239T5MV	2/1xF24T5HO, F39T5HO, Program Start, HPF, 120 thru 277V Ballast
ICN2S54	GE-254MVPSD	GE254MVPS90F42	B254PUNVD	PSA254T5MV	2/1xF54T5HO, Program Start, HPF, 120V thru 277V, 50/60Hz., Ballast with Leads
ICN45490C2LSG	GE454MVPS90G	QTP4X54T5HO/UNV	B454PUNVE	PSB454T5MV	4/2;3/1xF54T5HO, Program Start, HPF, 120 thru 277V Ballast
NO CROSS	GE296HOMVN	QT2X96T12HO-120RSN	NO CROSS	PSD248T12HOMV	2x48T12HO, Program Start, HPF, 120V thru 277V Ballast
NO CROSS	NO CROSS	NO CROSS	B132R120S30 B132R277S30	PSL132T8MV3D	1xF32T8 Program Start, HPF, 120 thru 277V, 3-Step Dimming Ballast
NO CROSS	NO CROSS	NO CROSS	B232SR120S B232SR277S	PSL232T8MV3D	2xF32T8, Program Start, HPF, 120V thru 277V 3-Step Dimming Ballast
IOP3PSP32SC	GE332MVPSN	NO CROSS	NO CROSS	PSL332T8HEMV	3/2xF17T8-F32T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	GE332MVPSL	NO CROSS	NO CROSS	PSL332T8HEMVL	3/2xF17T8-F32T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	NO CROSS	NO CROSS	B332R120S30 B332SR277S30	PSL332T8MV3D	2xF32T8, Program Start, HPF, 120 thru 277V, 3-Step Dimming Ballast
IOP4PSP32SC	GE432MVPSN	NO CROSS	NO CROSS	PSL432T8HEMV	4/3xF17T8-F32T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	GE432MVPSL	NO CROSS	NO CROSS	PSL432T8HEMVL	4/3xF17T8-F32T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	NO CROSS	NO CROSS	C213347BE/SE/ BES	PSM213CQ347W DW/DSW	2/1xCFQ13W/G24q, Program Start, HPF, 347V Ballast
ICF-2S13-M1-BS ICF-2S13-H1-LD ICF-2S13-M1-LS	GEC213MVPSBE S GEC213MVPS- SE	QTP 2X13/UNV QTP 2X13/UNV BS QTP 2X13UNV TS	C213UNVSE C213UNVBE C213UNVBES	PSM213CQMWW DW/DSW	2/1xCFQ13W/G24q, Program Start, HPF, 120V thru 277V, 50/60Hz., World Series Ballast with leads
NO CROSS	NO CROSS	NO CROSS	C218347SE/BE/ BES	PSM218CQ347W DW/DSW	2/1xCFT18W/G24q, Program Start, HPF, 347V Ballast
ICF-2S18-M1-BS ICF-2S18-H1-LD ICF-2S18-M1-LS	GEC218MVPS- BES GEC218MVPS-SE	QTP 2X18/UNV QTP 2X18/UNV BS QTP 2X18UNV TS	C218UNVSE C218UNVBE C218UNVBES	PSM218CQMWW DW/DSW	2/1xCFQ18W/G24q, Program Start, HPF, 120V thru 277V, 50/60Hz., World Series Ballast, Dual Entry
NO CROSS	NO CROSS	NO CROSS	C2642/347SE C2642/347BE C2642/347BES	PSM226CQ347W DW/DSW	2/1xCFQ26W/G24q, Program Start, HPF, 347V Ballast
ICF-2S26-M1-BS ICF-2S26-H1-LD ICF-2S26-M1-LS	GEC226MVPS- BES GEC226MVPS-SE	QTP 2X26/UNV QTP 2X26/UNV BS QTP 2X26UNV TS	C2642UNVSE C2642UNVBE C2642UNVBES	PSM226CQMWW DW/DSW	2/1xCFQ26W/G24q, Program Start, HPF, 120V thru 277V, 50/60Hz., World Series Ballast with leads
NO CROSS	NO CROSS	NO CROSS	C242347BE/SE/ BES	PSM242TR347W DW/DSW	2/1xCFQ/CFTR26-CFTR42, Program Start, HPF, 347V Ballast
IZT1T42M2BS IZT1T42M2LD	NO CROSS	NO CROSS	NO CROSS	PSP126CQIVDWCD	1x26CFL, Program Start, HPF, 0-10V Dimming, 100 thru 277V Ballast
IOP-1S32SC	GE132MVPSH	QTP1X32T8/ UNVPSNTC	NO CROSS	PSS132T8HEMV	1xF17T8-F40T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast

CROSS REFERENCE

Advance	GE	Osram	Universal	Robertson Model Number	Description
NO CROSS	GE132MVPSH	NO CROSS	NO CROSS	PSS132T8HEMVH	1xF17T8-F40T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
IOP-1S32LWSC	GE132MVPSL	QTP1X32T8/UNVPSX-TC	NO CROSS	PSS132T8HEMVL	1xF17T8-F40T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	GE232MVPSN	QTP2X32T8/UNVPSNTC	NO CROSS	PSS232T8HEMV	2/1xF17T8-F32T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	GE232MVPSH	NO CROSS	NO CROSS	PSS232T8HEMVH	2/1xF17T8-F32T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
IOP2S32LWSC	GE232MVPSL	QTP2X32T8/UNVPSX-TC	NO CROSS	PSS232T8HEMVL	2/1xF17T8-F40T8, Program Start, HPF, High Efficiency, 120 thru 277V Ballast
NO CROSS	NO CROSS	NO CROSS	ES1T528UNVK DIM10	PST128T5IVCD	1xF14T5HE-F28T5HE, Program Start, HPF, 0-10V Dimming, 100 thru 277V, 50/60Hz.
NO CROSS	NO CROSS	NO CROSS	BT5128120 BT5128277	PST135T5MVW	1xF14T5HE-F35T5HE, Program Start, HPF, 120V thru 277V Ballast
ICN2S39	47534-B224PUNVCOG1C	QT1X3924120PHO QT1X3942277PHO	B24PUNVC	PST139T5MVW	1x3F24T5HO-F35T5HO, Program Start, HPF, 1210V thru 277V Ballast
IZT154	NO CROSS	QT1X54/120PHODIM QT1X54/277PHODIM	NO CROSS	PST154T5IVCD	1xF54T5HO, Program Start, HPF, 0-10V Dimming, 100 thru 277V, 50/60Hz. Ballast
NO CROSS	NO CROSS	QTP1X54T5HOUNV	NO CROSS	PST154T5MVW	1xF54T5, Program Start, HPF, 120V thru 277V Ballast
IEZ2S24D	B239PUN-VDOG1C	QTP2X39	B224PUNVC	PST224T5MVW	2xF24T5HO, Program Start, HPF, 120V thru 277V Ballast
ICN2S28N	GE228MVPSA	QT2X28120PS QT2X28277PS QTP2X28T5120PSNE QTP2X28T5277PSNE	B228PUNV85D BT5228120 BT5228277	PST228T5MVW	2xF14T5HE-F28T5HE, Program Start, HPF, 120V thru 277V Ballast
ICN1S80ICN1S80ICN1S80 VZT-180	GE180MVPSD	QTP1X80T5HO UNVPSN NL	NO CROSS	PSV180T5IV	1xF54T5HO-F80T5HO, Program Start, HPF, 120V thru 277V Ballast
ICN2S28N	GE228MVPSA	QT2X28120PS QT2X28277PS QTP2X28T5120PSNE	B228PUNVC	PSV228T5MV	2xF14T5HE-F28T5HE, Program Start, HPF, 120V thru 277V Ballast
ICN2S28N	GE228MVPSA	QTP2X28T5U NVPSNE	B228UNVC	PSV235T5MV	2xF35T5, Program Start, HPF, 120V thru 277V Ballast
IZT2TTS40SC	NO CROSS	NO CROSS	B228UNVC	PSV239T5IVCD	2x18FT-40FT, Program Start, HPF, 0-10V Dimming, 100V thru 277V, 50/60 Hz. Ballast
ICN2S39	47540-B239PUN-VDOG1C	QT1X3924120PHO QT1X3942277PHO QT2X3924120PHO QT2X3924277PHO	NO CROSS	PSV239T5MV	2/1xF39T5HO, Program Start, HPF, 120V thru 277V Ballast
ICN2S39	47540-B239PUN-VDOG1C	QT1X3924120PHO QT1X3942277PHO QT2X3924120PHO QT2X3924277PHO	B239PUNVD	PSV239T5MVW	2xF39T5HO, Program Start, HPF, 120V thru 277V Ballast
RZT/VZT2S54	NO CROSS	NO CROSS	NO CROSS	PSV254T5IVCD	2xF54T5HO, Program Start, HPF, 0-10V Dimming, 100V thru 277V, 50/60 Hz. Ballast
ICN2S54	GE-254MVPSD	QTP2X52T5HOUNVPSN	B254PUNVHB	PSV254T5MV	2xF54T5, Program Start, HPF, 120V thru 277V Ballast
ICN2S54	GE-254MVPSD	GE254MVPS90F42	B254PUNVD	PSV254T5MVEL	2xF54T5, Program Start, HPF, 120V thru 277V Ballast with Leads
HCN2S5490CG	NO CROSS	QTP2X54T5HO/347-480 PSN HTNL	B254PHRVHB-E	PSY254T5347EL	2/1xF54T5 With Leads 347-480 Volt Input
ICN45490C2LSG	GE-454MVPS90G	QTP4X45T5HOUNV	B454PUNVE	PSY454T5MVEL	4/2, 3/1xF54T5 Program Start, HPF, 120V thru 277V Ballast with Leads
ICN2S28N	GE228MVPSA	NO CROSS	NO CROSS	REU135T5120	1xF21T5-F35T5, Preheat Rapid Start, HPF, 120V Ballast
REL2S110	GE296HO MVN	QT2X96T12HO-120RSN	B295SRUNVHP	RSD296T12HOMVIP	2/1xF96T12, Rapid Start, 120V thru 277V Ballast

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CROSS REFERENCE

Advance	GE	Osram	Universal	Robertson Model Number	Description
REB-113-M6	NO CROSS	NO CROSS	CBT113L-120S	RSO113CQ120 BL/BLS	1xCFQ113QW/G24q, Preheat-Rapid Start, NPF, 120V, 50/60 Hz. Ballast
REB-118-M6	NO CROSS	NO CROSS	CBT118L-120S	RSO118CQ120 BL/BLS	1xCFQ18W/G24Qq, Preheat Rapid Start, NPF, 120V, 50/60 Hz. Ballast
REB-126-M6	NO CROSS	QTR1X26CF 120V	CBT126L-120S	RSO126CQ120 BL/BLS	1xCFQ26W/G24q, Preheat Rapid Start, NPF, 120V, 50/60 Hz. Ballast
NO CROSS	NO CROSS	NO CROSS	NO CROSS	RSO142TR120 BL/BLS	1xCFTR4W/G24q, Preheat Rapid Start, NPF, 120V, 50/60 Hz. Ballast
REB-2S13-M6	NO CROSS	NO CROSS	CBT213L-120S	RSO213CQ120 BL/BLS	2XCFQ1W3/G24q, Preheat Rapid Start, NPF, 120V, 50/60 Hz. Ballast
REB-2S18-M6	NO CROSS	NO CROSS	CBT218L-120S	RSO218CQ120 BL/BLS	2XCFQ18W/G24q, Preheat Rapid Start, NPF, 120V, 50/60 Hz. Ballast
REB-2S26-M6	NO CROSS	NO CROSS	NO CROSS	RSO226CQ120 BL/BLS	2XCFQ26W/G24q, Preheat Rapid Start, NPF, 120V, 50/60 Hz. Ballast
RELB2S40SC	GE40RS120 GE240RSMVN	QTP2X40T12120RSNSC	B234SR120MA	RSS240T12MVIP	2xF30T12-F40T12, Rapid Start, HPF, 120V thru 277V, 50/60Hz., Individually Packaged
NO CROSS	NO CROSS	NO CROSS	CBT122L120S	RSW122C120WS	1xFC8T9, Preheat Rapid Start, NPF, 120V Ballast
NO CROSS	NO CROSS	NO CROSS	CBT140L120S	RSW140C120WS	1xFC12T9-FC16T9, Preheat Rapid Start, NPF, 120V, 50/60Hz. Ballast
NO CROSS	NO CROSS	QTP2X40T12120RSNSC	NO CROSS	RSW140T12120	1x40T12, Preheat Rapid Start, NPF, 120V Ballast
NO CROSS	NO CROSS	NO CROSS	NO CROSS	RSW220T12120	2xF15T12-F20T12, Preheat Rapid Start, NPF, 120V, 50/60Hz. Ballast
NO CROSS	NO CROSS	QTP2X40T12120RSNSC	NO CROSS	RSW240T12120	2x40T12, Preheat Rapid Start, NPF, 120V Ballast
RMB1P13	NO CROSS	NO CROSS	CBT1BL120	RSZ108T5120	1xF4T5-F8T5, Preheat Rapid Start, NPF, 120V Ballast
RMB1P13	NO CROSS	NO CROSS	CBT113L120	RSZ114T5120	1xF13T5-F21T5, Preheat Rapid Start, NPF, 120V Ballast
NO CROSS	NO CROSS	NO CROSS	CBT213L120	RSZ128T5120	1xF21T5-F28T5, Preheat Rapid Start, NPF, 120V Ballast

* Robertson Worldwide cannot guarantee 100% match among other manufacturers. To ensure product accuracy or compare product data sheets to the model being replaced, please visit our website at www.robertsonww.com to view complete specification pages.

For a complete listing of our Cross Reference, please visit the Customer Support Menu Item at www.robertsonww.com. It's simple: Just plug in the manufacturer's model number and click "GO". The Robertson Replacement model will appear on your screen.

Because Robertson Worldwide is noted particularly for its ability to customize, only industry standardized parts are listed above. Items not listed in the cross reference are unique products to Robertson and should not be replaced with products from another manufacturer.

Contact (800)323-5633 or visit www.robertsonww.com for customization inquiries!

LIMITED WARRANTY STATEMENT

Robertson Worldwide (Robertson), 13611 Thornton Road, Blue Island, IL 60406, warrants those products manufactured and distributed by the company will be free from defects in material and workmanship but not against damage caused by abnormal stress or operating conditions for the following periods from the date of manufacture:

Product Type	Warranted for Period
Performance Series Electronic Product	2 Years (Maximum Case Temperature 75°C or less)
UV Series Electronic Product	2 Years (Maximum Case Temperature 75°C or less)
Energy Star Electronic Product	2 Years (Maximum Case Temperature 75°C or less)
Standard Magnetic Product	2 Years (Maximum Case Temperature 90°C or less)
High Intensity Discharge (HID) Product	2 Years (Maximum Case Temperature 150°C or less)
Sterling Series Preheat (Rapid) Start Electronic Product	3 Years (Maximum Case Temperature 75°C or less)
Energy Star Electronic Product	3 Years (Maximum Case Temperature 90°C or less)
Sterling Series Program Start Electronic Product	3 Years (Maximum Case Temperature 90°C or less) 5 Years (Maximum Case Temperature 75°C or less)
World Series Electronic Product	5 Years (Maximum Case Temperature 90°C or less)

This warranty is conditional upon proper storage, installation, use and maintenance. This warranty is not applicable to any product which is not installed and operated in accordance with Robertson specifications and instructions or in accordance with the National Electrical Code (NEC), the Standards for Safety of Underwriters Laboratories, Inc. (UL), and the Standards of the American National Standards Institute (ANSI) or, in Canada, the Canadian Standards Association (CSA).

The conditions of any test for product which is claimed to not perform according to the terms of this warranty shall be mutually agreed upon in writing; Robertson reserves the right to be represented at any such test.

The company's obligation under this warranty shall be the repair or replacement of any defective part or parts or providing a replacement product.

NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY BEYOND THE AFOREMENTIONED WARRANTY PERIOD. The foregoing warranty is exclusive of all other statutory, written or oral warranties, and no other warranties of any kind, statutory or otherwise, are given or herein expressed. This warranty sets forth Robertson's responsibilities regarding the ballast and claimant's exclusive remedy.

LIMITATIONS OF LIABILITY. Under no circumstances, whether as a result of breach of contract, breach of warranty, tort, strict liability or otherwise, will Robertson be liable for consequential, incidental, special or exemplary damages, including, but not limited to, loss of profits, loss of use or damage to any property or equipment, cost of capital, cost of substitute product, facilities or services, down time costs or claims of claimant's customers.

Robertson's liability on any claim of any kind for any loss or damages arising out of, resulting from or concerning any aspect of this warranty or from the product or services furnished hereunder shall not exceed the price paid to Robertson for the specific ballast or ballasts which gives rise to the claim.

This warranty gives the claimant specific legal rights. The claimant may also have other rights which vary from state to state.

ROBERTSON DATE CODE DECIPHER TOOL

After final inspection, each Robertson ballast is stamped with a date code. This number can be found stamped on the side or bottom of the case, or printed in two rows on a white label affixed to the case. The warranty period becomes effective at the date of manufacture. Due to changes in manufacturing, there are two types of date codes that are used.

Example:

85.99	=	85th day of the 99 calendar year
260.08	=	260th day of the 08 calendar year
0720 00	=	20th Week of 2007
1032 00	=	32nd Week of 2010

Call (800) 323-5633 or e-mail info@robertsonww.com today!

GLOSSARY OF TERMS

Anti-Arc: A function of the ballast that detects and limits the energy should arcing occur at the ballast outputs.

Anti-Striation: Circuitry used to prevent striations or spiraling in energy saving lamps due to low temperature or low current operation

Ballast Efficacy Factor (BEF): The BEF is defined as the average ballast factor divided by the power input, in watts, of a fluorescent lamp ballast.

$$\text{Ballast Factor} = \frac{\text{Commercial Ballast Light Output}}{\text{Reference Reactor Ballast (100\% Light Output)}}$$

$$\text{B.E.F.} = \frac{\text{Ballast Factor}}{\text{Ballast Watt Input}}$$

B.E.F. numbers are determined by a laboratory measurement which allows for a controlled relative comparison between measured products. BEF numbers can only be used to compare ballasts which operate the same type and quantity of lamps.

The BEF's of two different systems, such as a two-lamp F40T12 and a two-lamp F32T8, have no relationship to each other and cannot be used as a means of comparison.

Ballast Factor: Formerly referred to as "relative light output", Ballast Factor (expressed as a percent) is the light output of the lamp(s) operated by a commercial ballast divided by the light output of the same lamp(s) operated by a reference ballast, as determined in accordance with the test procedures specified in ANSI standard C82.2, Method of Measurement.

Circle-E: A marking of a ballast that shows compliance with the Federal Ballast Energy Law (Public Law 100-357).

Consortium for Energy Efficiency (CEE): A nonprofit public benefits corporation that develops initiatives for its North American members to promote the manufacture and purchase of energy-efficient products and services. CEE members include utilities, statewide and regional market transformation administrators, environmental groups, research organizations and state energy offices in the U.S. and Canada.

Dimming: Devices with either manual or automatic controls to change light output. These are generally more complex and less efficient than standard ballasts and are more expensive. However, they require less energy when the lamps are dimmed.

Efficacy: The lumen output per unit of power supplied to the lamp (lumens per watt).

ENERGY STAR: The program that evaluates the energy efficiency of appliances, fixtures, and other utilities, co-sponsored by the U.S. Environmental Protection Agency and the U.S. Department of Energy in an effort to reduce greenhouse gas emissions to protect the environment.

Inrush Current: The surge of current that takes place when power is applied to a ballast. With magnetic ballasts, this inrush current is typically 10 to 20 times the steady state rms current of the ballast. With electronic ballasts, this inrush current may be significantly higher.

The high inrush current is a result of the initial charging of the storage capacitors in an electronic ballast. Depending upon the circuitry that the electronic ballast incorporates, this inrush surge may be as high as 100 times the steady state current.

Electronic ballasts can be generally subdivided into two classes: those with "passive" input circuits and those with "active" input circuits.

Passive input circuits typically have inrush currents up to 30 times steady state with durations measured in milliseconds.

Active input circuits typically have inrush currents up to 100 times steady state, but with durations measured in microseconds. It is important to recognize that the inrush currents of multiple ballasts on a circuit do not directly add. Since high inrush currents may damage power switching components such as light switches, relays, circuit breaks and occupancy sensors, evaluation of the lighting system is advisable.

Instant Start: A method for starting electric discharge lamps by applying a voltage high enough to provide and sustain an arc through the lamp without heating the cathodes. The starting interval is very short, always less than 200 milliseconds and typically less than 100 milliseconds. The lamps are usually defined by a single pin base.

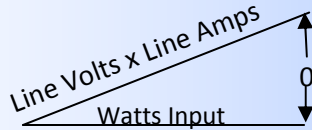
Lamp Current Crest Factor: A ratio of the peak lamp current divided by the rms lamp current. The crest factor is a function of the ballast. Maximum allowable values for crest factor have been specified by ANSI standards. If the crest factor is above these values, lamp life may be reduced.

Lumens per Watt: Units of light produced per unit of power.

NEMA Premium: The NEMA Premium Electronic Ballast Program provides the method for identifying the most efficient T8 fluorescent ballasts available in the market and identifies models that are consistent with the Consortium for Energy Efficiency (CEE) specifications for high performance lamps and ballasts, tested in accordance with ANSI C82 Standards.

GLOSSARY OF TERMS

Power Factor: Indicates how efficiently power generation and distribution systems will be utilized. By definition, it is the ratio of real power to apparent power delivered into any electrical system with “real power” being input watts and “apparent power” the product of volts multiplied by amperes supplied by the power line.



$$\text{Power Factor} = \frac{\text{Watts Input}}{\text{Line Volts} \times \text{Line Amps}}$$

The greatest impact of power factor is the fact that the line current is minimized with high power factor ballasts. This maximizes the number of fixtures that can be installed on a circuit and minimizes wiring costs.

High Power Factor ballasts are those that have a power factor of 0.9 (90%) or higher. The power factor is the simple ratio of watts/(volts x amps).

Normal Power Factor equipment draws higher line current and loads your circuits and those of the utility. (Sometimes it also results in a penalty charge from the utility.) Because normal power factor ballasts require up to twice the line current of high power factor ballasts, there are fewer fixtures on a fully-loaded circuit, which increases wiring costs.

Preheat Start: A method of starting fluorescent lamps in which the electrodes are heated before a switch opens to allow a starting voltage to be applied across the lamp. Prior to remaining lit, the lamp will briefly flicker on and off and may require multiple attempts to start to create the arc across the lamp electrodes.

Preheat-Rapid Start: A method for starting electric discharge hot cathode lamps by preheating the cathodes for a predetermined time based on the lamp/ballast combination through a discrete control circuit in the ballast. After the cathodes have heated to emission temperature, the available open circuit voltage is sufficient to start the lamp. A reduced amount of cathode heating is still present after the lamp is in operation.

Programmed Start: A method for starting electric discharge hot cathode lamps by preheating the cathodes to the required emission temperature, while, at the same time restraining the open circuit voltage to prevent lamp starting. After the cathodes are heated to the required emission temperature, the open circuit voltage is increased to properly ignite the lamp. The cathode heating is then reduced or removed once the lamp is in operation.

Rapid Start: A method for starting electric discharge hot cathode lamps by continuously heating the cathodes through low voltage filament windings in the ballast, a separate low voltage transformer, or by other means of cathode heating. After the cathodes have heated to emission temperature, the available open circuit voltage is sufficient to start the lamp. (A grounded reflector close to the lamp, together with a grounded line circuit is required to provide a starting-aid effect and assist in the starting process.) The low filament voltage for cathode heating is still present after the lamp is in operation.

Reference Ballast: A laboratory device used to provide ANSI specified operating parameters for fluorescent and HID lamps.

RoHS Compliant: Commonly referred to as the Restriction of Hazardous Substances, RoHS is the directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2002/95/EC including Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls, and Polybrominated diphenyl ether.

Safety Listings: Any laboratory accredited by OSHA as a Nationally Recognized Testing Laboratory (NRTL) for safety testing in particular product areas which can provide listing services equivalent to UL. ETL and CSA are active in the ballast field and can provide this listing.

The term UL Listing is used to describe ballasts which comply with Underwriters Laboratories, Inc. requirements for fluorescent lamp ballasts (ANSI/UL 935) and have usually been tested and listed by UL.

What does “UL” cover? The charter of Underwriters Laboratories says: “By scientific investigation, study, experiment and test, UL does its part in helping to prevent the loss of life and property from the hazards of fire, casualty and crime.” The UL emblem relates to the safety aspects of ballast operation and application.

T5, T8, T10, T12: The industry standard in reference to naming a fluorescent lamp, where “T” stands for ‘Tubular’ and the numerical characters that follow refer to the diameter of the lamp in 1/8 inch increments.

Thermal Protection: A ballast feature which refers to the self resetting switch that disconnects power to the ballast if internal temperature rise above the trip point (usually 105° C). This feature is used in some ballasts to limit maximum case temperatures and meet UL Class P safety standards.

Total Harmonic Distortion (THD): A measurement of the harmonic distortion present in a signal, which is the ratio of the sum of the powers of all harmonic components to the power of the fundamental frequency. A THD rating < 1% is considered to be in high-fidelity and inaudible to the human ear.

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Specifications for any of the previously mentioned models, as well as all other Robertson Worldwide products, are subject to change without notice. For the most up-to-date information regarding availability, specifications and other information, visit our website at www.robertsonww.com.

A low-angle, upward-looking photograph of several skyscrapers against a clear blue night sky. The buildings are illuminated from within, with many windows glowing yellow and white. The perspective creates a sense of height and scale. The buildings have various architectural styles, including glass facades and brickwork.

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