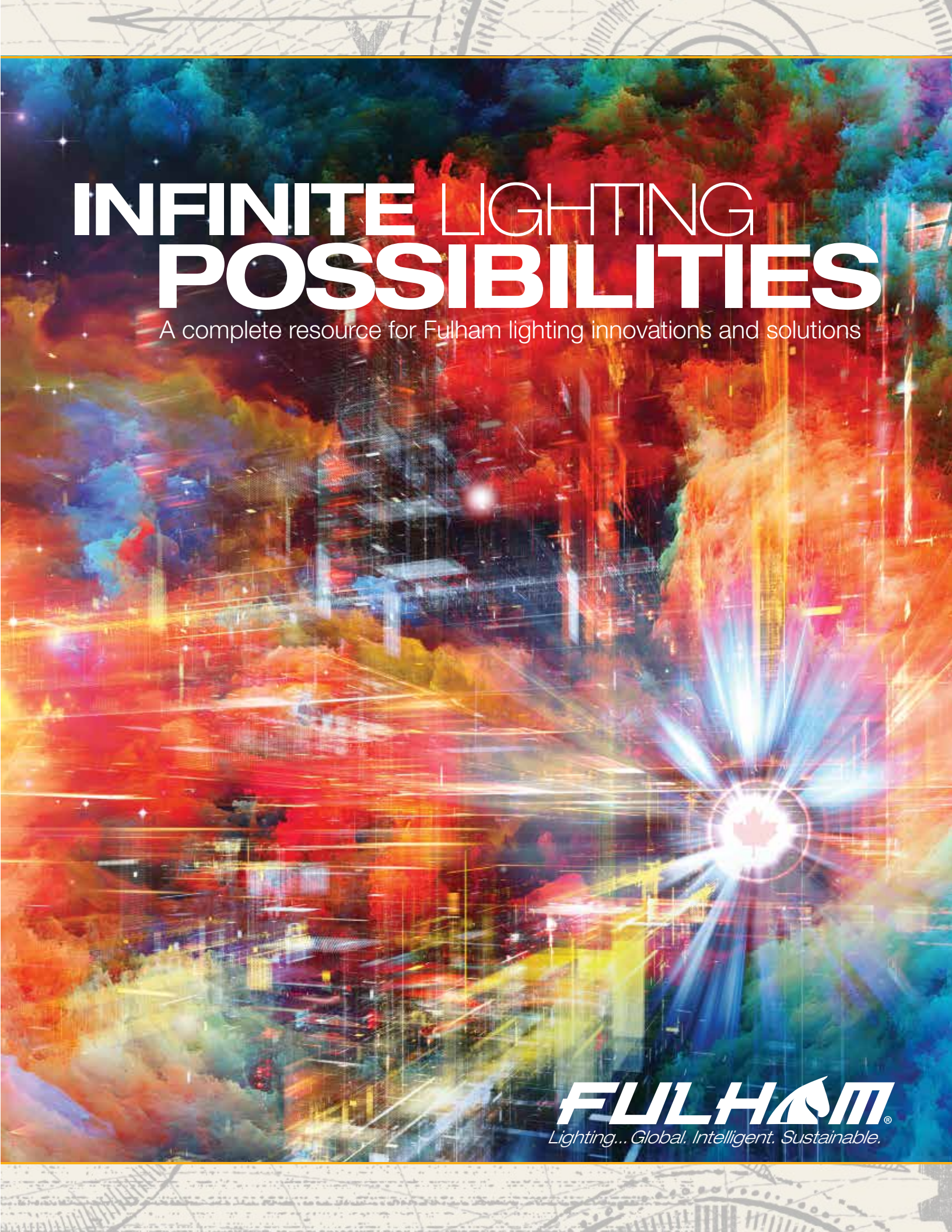


The background is a vibrant, abstract composition of swirling colors in shades of blue, red, orange, and yellow. It is overlaid with numerous thin, white, streak-like lines that radiate from a central point, creating a sense of dynamic energy and light. The overall effect is reminiscent of a night sky filled with star trails or a complex, colorful data visualization.

INFINITE LIGHTING POSSIBILITIES

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Fulham is also equipped with the capability to create Custom Products or Private Label items just for you. For example, should you require LED Modules of specific shapes or a sophisticated controllable LED driver to be designed and manufactured, Fulham is ready and able to assist. If you need an LED or Induction retrofit solution in order to utilize your existing fixtures (preserve your fixture investment), then we have the Engineering capacity to help you.

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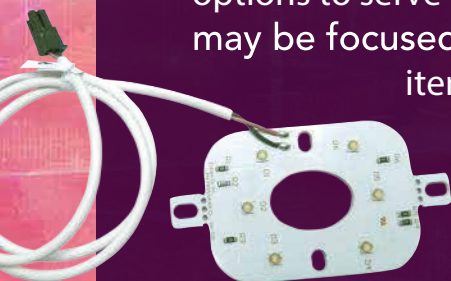


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FULHAM

RACEHORSE™

CFL FLUORESCENT ELECTRONIC BALLASTS

FEATURES

- 347V
- < 10% ATHD
- High Power Factor
- End of Life (EOL) Protection
- Operate 1 or 2 Lamps
- Twin, Triple, Quad, Double Quad 9-70W
- cULus
- 90°C Max. Operating Temp.
- -30°C Min. Start Temp.
- Programmed Start
- Auto Restart
- Cold Start
- Push-In Connectors

APPLICATIONS

- Retail & Industrial Medium & High Bay
- Canopy Lighting
- Flood Lighting
- Parking Garages
- Gymnasiums
- Indirect Wall Washing
- Downlighting
- Outdoor Architectural
- Post Tops
- Wall Sconces
- Ceiling Surface Mount
- Air Handling Spaces (BLS Models)



RaceHorse Kits

COMMON SPECIFICATIONS

Operating Voltage:	347V	Lamp Starting Temp.:	See Lamp Specifications
Frequency:	50/60Hz	Ballast Maximum Case Temp.:	167°F (75°C) - 5 Year Warranty
ATHD:	< 10% Meets ANSI C82.11-1993	Ballast Maximum Case Temp.:	194°F (90°C) - 3 Year Warranty
Protection/Output:	Open Lamp, Shorted Lamp, End of Life	Ballast Lamp Starting Mode:	Programmed Start
Input Over Current Protection:	Fuse	Inherent Thermal Protection	Class P
Transient Protection:	C62.41 Class A 7 strikes	Sound Rating	"A"
Regulatory Approvals:	UL & cULus Listed Type 1 Outdoor	Remote Mounting	18' Maximum at -18°C
High Power Factor:	> .98	Anti-Arcing Protection	UL Type CC
Open Circuit Voltage:	< 300V RMS Max.	RHA-EMI: FCC CFR Title 47 Part 18 non-consumer	
Ballast Min. Operating Temp.:	-22°F (-30°C)	BLS models are approved for air handling spaces	

Model No.	RHA-347-213-BLS/C/K	RHA-347-218-BLS/C/K	RHA-347-226-BLS/C/K	RHA-347-242-BLS/C/K
Max Load	26W	36W	57W	84W
Max Input Current	0.088 AMP	0.115 AMP	0.165 AMP	0.274 AMP
Ballast Size	L 5.0", L1 4.2", H 1", W 2.4"	L 5.0", L1 4.2", H 1", W 2.4"	L 5.0", L1 4.2", H 1", W 2.4"	L 5.0", L1 4.2", H 1.3", W 3"
Ballast Weight	5.2 oz.	5.2 oz.	5.2 oz.	7 oz.
Case Quantity	BLS Models: 40 pcs/ case C Models: 50 pcs/ case Kits (K): 20 pcs/ case	BLS Models: 40 pcs/ case C Models: 50 pcs/ case Kits (K): 20 pcs/ case	BLS Models: 40 pcs/ case C Models: 50 pcs/ case Kits (K): 20 pcs/ case	BLS Models: 50 pcs/ case C Models: 50 pcs/ case Kits (K): 30 pcs/ case

- **BLS** = Compact Case with mounting studs (8/32" studs on bottom plate, 2" on center)
- **C** = Compact Case; No studs on bottom plate
- **K** = Contractor Kit with stud adapter plate, lead wire set and wire removal tool

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
RHA-347-213-BLS/C/K	1 x	9CFT, 13CFQ, 13CFTR, 2D10W, 2D16W
	2 x	7CFT, 9CFT, 13CFQ, 13CFTR, 2D10W
RHA-347-218-BLS/C/K	1 x	18CFQ, 18CFTR, 2D21W
	2 x	18CFQ, 18CFTR, 2D16W, 2D21W
RHA-347-226-BLS/C/K	1 x	13CFT, 26CFQ, 26CFTR, 32CFTR, 42CFTR, 2D21W, 2D28W, 2D38W, T5CR22W, FT18, FT36/39, T5CR40W, FT24/27, 57CFM
	2 x	13CFT, FT18W, 26CFQ, 26CFTR, FT24/27, 2D21W, F24T5H0
RHA-347-242-BLS/C/K	1 x	CFM57, CFM70, 42CFTR, FT24/27, FT36/39, FT40, 2D28W, 2D38W, T5CR40W, 36TUV, GPH793T5L
	2 x	26CFQ, 26CFTR, 32CFTR, 42CFTR, FT24/27, FT36/39, FT40, 2D28W, 2D38W, T5CR22W, T5CR40W, 36TUV, GPH793T5L

FULHAM**RACEHORSE™****CFL FLUORESCENT
ELECTRONIC BALLASTS****FEATURES**

- 120V-277V (UNV)
- < 10% ATHD
- High Power Factor
- End of Life (EOL) Protection
- Operate 1 or 2 Lamps
- Twin, Triple, Quad, Double Quad 9-70W
- UL, cULus
- 90°C Max. Operating Temp.
- -30°C Min. Start Temp.

APPLICATIONS

- Retail & Industrial Medium & High Bay
- Canopy Lighting
- Flood Lighting
- Parking Garages
- Gymnasiums
- Indirect Wall Washing
- Downlighting
- Outdoor Architectural
- Post Tops
- Wall Sconces
- Ceiling Surface Mount
- Air Handling Spaces (BLS Models)



RaceHorse Kits

COMMON SPECIFICATIONS

Operating Voltage:	120V-277V (Universal Voltage)	Lamp Starting Temp.:	See Lamp Specifications
Frequency:	50/60Hz	Ballast Maximum Case Temp.:	167°F (75°C) - 5 Year Warranty
ATHD:	< 10% Meets ANSI C82.11-1993	Ballast Maximum Case Temp.:	194°F (90°C) - 3 Year Warranty
Protection/Output:	Open Lamp, Shorted Lamp, End of Life	Ballast Lamp Starting Mode:	Programmed Start
Input Over Current Protection:	Fuse	Inherent Thermal Protection	Class P
Transient Protection:	C62.41 Class A 7 strikes	Sound Rating	"A"
Regulatory Approvals:	UL & cULus Listed Type 1 Outdoor	Remote Mounting	18' Maximum at -18°C
High Power Factor:	> .98	Anti-Arcing Protection	UL Type CC
Open Circuit Voltage:	< 300V RMS Max.	RHA-EMI: FCC CFR Title 47 Part 18 non-consumer	
Ballast Min. Operating Temp.:	-22°F (-30°C)	(RH-EMI: FCC CFR Title 47 Part 18 consumer & non-consumer)	
		BLS models are approved for air handling spaces	

	RACEHORSE 1	RACEHORSE 2†	RACEHORSE 3†	RACEHORSE 4†
Model No.	RHA-UNV-213-BLS/C/K	RHA-UNV-218-BLS/C/K	RHA-UNV-226-BLS/C/K	RHA-UNV-242-BLS/C/K
Max Load	26W	36W	57W	84W
Max Input Current	.28 AMP	.344 AMP	.52 AMP	.752 AMP
Ballast Size	L 5.1" (4.3" case), W 2.4", H 1"	L 5.1" (4.3" case), W 2.4", H 1"	L 5.1" (4.3" case), W 2.4", H 1"	L 5.1" (4.3" case), W 3", H 1.3"
Ballast Weight	5.2 ounces	5.2 ounces	5.2 ounces	7 ounces
Case Quantity	BLS Models: 50 pcs/ case C Models: 50 pcs/ case Kits (K): 20 pcs/ case	BLS Models: 40 pcs/ case C Models: 50 pcs/ case Kits (K): 20 pcs/ case	BLS Models: 40 pcs/ case C Models: 50 pcs/ case Kits (K): 20 pcs/ case	BLS Models: 50 pcs/ case C Models: 50 pcs/ case Kits (K): 30 pcs/ case

- **BLS** = Compact Case with mounting studs (8/32" studs on bottom plate, 2" on center)
- **C** = Compact Case; No studs on bottom plate
- **K** = Contractor Kit with stud adapter plate, lead wire set and wire removal tool

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
RHA-UNV-213-BLS/C/K	1 x	13CFQ, 13CFTR, 2D16W
	2 x	7CFT, 9CFT, 13CFQ, 13CFTR, 2D10W
RHA-UNV-218-BLS/C/K	1 x	18CFQ, 18CFTR, 2D21W
	2 x	18CFQ, 18CFTR, 2D16W, 2D21W
RHA-UNV-226-BLS/C/K	1 x	13CFT, 26CFQ, 26CFTR, 32CFTR, 42CFTR, 2D21W, 2D28W, 2D38W, T5CR22W, FT18, FT36/39, T5CR40W, FT24/27, 57CFM
	2 x	13CFT, FT18W, 26CFQ, 26CFTR, FT24/27, 2D21W, F24T5HO
RHA-UNV-242-BLS/C/K	1 x	CFM57, CFM70, 42CFTR, FT24/27, FT36/39, FT40, 2D28W, 2D38W, T5CR40W, 36TUV, GPH793T5L
	2 x	26CFQ, 26CFTR, 32CFTR, 42CFTR, FT24/27, FT36/39, FT40, 2D28W, 2D38W, T5CR22W, T5CR40W, 36TUV, GPH793T5L



† These products have previously been tested as per SASO guidelines and comply with the SASO standards. If you are interested in your shipment being accompanied by a SASO conformity certificate, this can be arranged at cost for the testing. Please contact the Middle East regional office for details.



RACEHORSE™

T5HO & T5HE FLUORESCENT ELECTRONIC BALLASTS

FEATURES

- 120V-277V (UNV)
- < 10% ATHD
- High Power Factor
- End of Life (EOL) Protection
- Operate 1x, 2x, 3x & 4x Lamps
- TW, CR, T5HO, T5HE
- UL, cULus
- Programmed Preheat Start

APPLICATIONS

- Retail and Industrial Medium and High Bay
- Canopy Lighting
- Flood Lighting
- Parking Garages
- Gymnasiums
- Indirect Wall Washing
- Downlighting
- Outdoor Architectural
- Post Tops



COMMON SPECIFICATIONS

Operating Voltage:	120V-277V (Universal Voltage)	High Power Factor:	> .98
Frequency:	50/60Hz	Open Circuit Voltage:	600 V RMS Max.
ATHD:	< 10%	Ballast Min. Operating Temp.:	-18°C (0°F)
Protection/Output:	End of Life (EOL)	Ballast Maximum Case Temp.:	167°F (75°C) - 5 Year Warranty
Protection/Input:			
Over Current:	Fuse	Ballast Maximum Case Temp.:	194°F (90°C) - 3 Year Warranty
Transient Protection:	C62.41 Class A 7 strikes	Ballast Lamp Starting Mode:	Programmed Preheat Start
EMI: FCC CFR Title 47 Part 18 non-consumer		Inherent Thermal Protection	Class P
Regulatory Approvals:	UL & cULus Listed Type 1 Outdoor	Sound Rating	"A"

Model No.	RH21-UNV-224 LT5	RHA-UNV-224-LT5	RH22-UNV-239 LT5	RHA-UNV-239-LT5
Max. Load	52W	54W	87W	93W
Max. Current	0.44 AMP	0.45 AMP	0.73 AMP	0.78 AMP
Ballast Size	L 16.89", W 1.20", H 1"	L 9.45", W 1.31", H 1.06"	L 16.34", W 1.18", H 1"	L 9.45", W 1.31", H 1.06"
Connector Type	No Leads	Leads	No Leads	Leads
Case Quantity	20 pcs.	20 pcs.	20 pcs.	20 pcs.
Compliance	RoHS	RoHS	RoHS	RoHS

Model No.	RH23-UNV-254 LT5	RH28-UNV-454 LT5	RH13-UNV-228 LT5	RHA-UNV-228-LT5	RH14-UNV-235 LT5
Max. Load	115W	238W	67W	67W	77W
Max. Current	0.96 AMP	1.96 AMP	0.56 AMP	0.56 AMP	0.64 AMP
Ballast Size	L 16.88", W 1.23", H 1"	L 16.88", W 2.29", H 1"	L 16.89", W 1.20", H 1"	L 9.45", W 1.31", H 1.06"	L 16.89", W 1.20", H 1"
Connector Type	Push-in	Leads	No Leads	Leads	No Leads
Case Quantity	30 pieces	15 pieces	20 pieces	20 pieces	20 pieces
Compliance			RoHS	RoHS	RoHS

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
RH21-UNV-224 LT5	1 x	F24T5HO, F39T5HO, FT24W, T5CR22W, T5CR40W, FT40W, FT36W
RHA-UNV-224-LT5	2 x	F24T5HO, FT24W, T5CR22W
RH22-UNV-239 LT5	1 x	F39T5HO, F24T5HO, T5CR40W, T5CR22W, FT36W, FT24W, FT40W
RHA-UNV-239-LT5	2 x	F39T5HO, F24T5HO, T5CR40W, T5CR22W, FT36W, FT24W
	1 each	T5CR22W + T5CR40W
RH23-UNV-254 LT5	1 x	F54T5HO, FT55W, FT50W, FT36W, FC12T5 55W
	2 x	F54T5HO, FT55W, FT50W, FT36W, FC12T5 55W
RH28-UNV-454 LT5	3 x	F54T5HO, FT55W, FT50W, FT36W, FC12T5 55W
	4 x	F54T5HO, FT55W, FT50W, FT36W, FC12T5 55W
RH13-UNV-228 LT5	1 x	F28T5/HE, F21T5/HE, F14T5/HE
RHA-UNV-228-LT5	2 x	F28T5/HE, F21T5/HE, F14T5/HE
RH14-UNV-235 LT5	1 x	F35T5/HE, F28T5/HE, F21T5/HE
	2 x	F35T5/HE, F28T5/HE, F21T5/HE, F14T5/HE


RACEHORSE™
**T5HO FLUORESCENT
ELECTRONIC BALLASTS**
FEATURES

- Programmed Preheat Start for extended lamp life in frequent switching applications
- End of Life (EOL) Protection to safely remove power from the lamp as it nears end of life
- Cold Starting to ensure proper functionality even in low temperature applications (-18°C)
- Improved Reliability due to precision control flicker-free operation
- Auto-Restart which eliminates the need to reset the power mains after lamp replacement


COMMON SPECIFICATIONS

Operating Voltage:	120V-277V (Universal Voltage)	Type HL Approval:	Approved for Hazardous Location
Frequency:	50/60Hz	High Power Factor:	> .98
ATHD:	< 10%	Open Circuit Voltage:	600 V RMS Max.
Protection/Output:	End of Life (EOL)	Ballast Min. Operating Temp.:	-18°C (0°F)
Protection/Input:		Ballast Maximum Case Temp.:	(158°F) (70°C) - 5 Year Warranty
Over Current:	Fuse	Ballast Maximum Case Temp.:	(194°F) (90°C) - 3 Year Warranty
Transient Protection:	C62.41 Class A 7 strikes	Ballast Lamp Starting Mode:	Programmed Preheat Start
EMI: FCC CFR Title 47 Part 18 non-consumer		Inherent Thermal Protection	Class P
Regulatory Approvals:	UL & cULus Listed Type 1 Outdoor	Sound Rating:	"A"

Model No.	RHA-UNV-254-LT5	RHA-UNV-454-LT5
Max. Load	120W	240W
Max. Current	1.0 AMP	2.0 AMP
Ballast Size	L 9.53", W 1.32", H 1.05"	L 16.88", W 1.69" H 1.18"
Connector Type	Leads	Leads
Case Quantity	25 pcs.	20 pcs.

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
RHA-UNV-254-LT5	1 x	F54T5HO, FT55W, FT50W, FC12T5 55W
	2 x	F54T5HO, FT55W, FT50W, FC12T5 55W
RHA-UNV-454-LT5	2 x	F54T5HO, FT36W, FT55W
	3 x	F54T5HO, FT36W, FT55W
	4 x	F54T5HO, FT36W, FT55W

FLUORESCENT



FLUORESCENT IN-FIXTURE ELECTRONIC BALLASTS



FEATURES

- Versatile
- Energy Saving
- High Power Factor
- Lightweight
- Small Case Size
- Solid-State Electronics

**10 BALLASTS
OPERATE 132 LAMPS
IN 860 COMBINATIONS**

COMMON SPECIFICATIONS

Operating Voltage:	120VAC $\pm$ 10% 230VAC $\pm$ 10% 277VAC $\pm$ 10%	Protection/Output:	Open/Shorted Lamp
Frequency:	50/60Hz	Regulatory Approvals:	UL Listed Type1 or Type 2
ATHD:	Meets ANSI C82.11-1993	High Power Factor:	> .90
Protection/Input:		Open Circuit Voltage:	600V RMS Max.
Over Current:	Fuse	Ballast Min. Operating Temp.:	-20°F (-30°C)
Transient Protection:	C62.41 Class A 7 strikes	Ballast Maximum Case Temp.:	158°F (70°C)
EMI: FCC CFR Title 47 Part 18 non-consumer		Ballast Lamp Starting Mode:	Instant Start
		Inherent Thermal Protection	Class P
		Sound Rating	"A"

NOTE: Frequently switched, short duration ON/OFF cycles with any Instant Start ballast will reduce lamp life. Please contact your lamp manufacturer for details.

FLUORESCENT

	WORKHORSE 1	WORKHORSE 2	WORKHORSE 22	WORKHORSE 3	WORKHORSE 33	WORKHORSE 4
Model No. 120V	WH1-120-L	WH2-120-L WH2-120-C (BLS)	WH22-120-L WH22-120-C (BLS)	WH3-120-L WH3-120-C (BLS)	WH33-120-L WH33-120-C (BLS)	WH4-120-L
Max. Current 120VAC	.20 AMP	.33 AMP	.25 AMP	.56 AMP	.53 AMP	.56 AMP
Model No. 230V	N/A	WH2-230-L	N/A	WH3-230-L	N/A	N/A
Max. Current 230VAC		.26 AMP		.29 AMP		
Model No. 277V	WH1-277-L	WH2-277-L WH2-277-C (BLS)	WH22-277-L WH22-277-C (BLS)	WH3-277-L WH3-277-C (BLS)	N/A	WH4-277-L
Max. Current 277VAC	.11 AMP	.15 AMP	.15 AMP	.24 AMP		.21 AMP
Max. Power	28W	35W	35W	64W	64W	70W
Black/White Wires	12"	L-18" C-12"	L-18" C-12"	L-18" C-12"	L-18" C-12"	18"
Red/Yellow Wires	24"	L-36" C-12"	L-36" C-12"	L-36" C-12"	L-36" C-12"	36"
Ballast Sizes	120L : H .75", W 1", L 6" 277L : H .75", W 1", L 7.5"	L : H 1", W 1", L 5.5" 120C : H 1", W 1.75", L 3.3" 277C : H 1", W 2.3", L 3.3"	L : H 1", W 1", L 5.5" 120C : H 1", W 1.75", L 3.3" 277C : H 1", W 2.3", L 3.3"	L : H 1", W 1.5", L 6.5" 120C : H 1", W 2.5", L 3.8" 277C : H 1", W 3.1", L 3.8"	L : H 1", W 1.5", L 6.5" C : H 1", W 3.1", L 3.82"	L : L 6.5", W 1.5", H 1"
Weight	4.5 ounces	7 ounces	7 ounces	10 ounces	10 ounces	10 ounces
Case Qty	50 pieces	50 pieces	50 pieces	50 pieces	50 pieces	50 pieces

Refer to pages 53-59 for lamp compatibility.
Refer to pages 60 and 61 for wiring diagrams.



	WORKHORSE 5	WORKHORSE 6	WORKHORSE 7	WORKHORSE 8		WORKHORSE 15
Model No. 120V	WH5-120-L	WH6-120-L	WH7-120-L WH7-120-H	WH8-120-L	Model No. 120-277V (UNV)	WH15-UNV-L
Max. Current 120VAC	1.15 AMP	1.04 AMP	1.82 AMP	1.8 AMP	Max. Current 120VAC	.75 AMP
Model No. 230V	WH5-230-L	N/A	WH7-230-L	WH8-230-L	Max. Current 277VAC	.318 AMP
Max. Current 230VAC	0.57 AMP		1.10 AMP	1.1 AMP	Max. Power	90.32W
Model No. 277V	WH5-277-L	WH6-277-L	WH7-277-L	WH8-277-L	Black/White Wires	25" +/- 1"
Max. Current 277VAC	0.48 AMP	0.50 AMP	.85 AMP	.74 AMP	Red/Yellow Wires	46" +/- 1"
Max. Power	128W	140W	220W	220W	Blue Wire	31" +/- 1"
Black/White Wires	18"	18"	18"	18"	Ballast Sizes	L 9.48", W 1.41", H 1.04"
Red/Yellow Wires	36"	36"	36"	36"	Weight	1.15 lbs.
Ballast Sizes	120L: L 8.5", W 1.72", H 1" 277L: L 9.5", W 1.72", H 1"	L: L 8.5", W 1.72", H 1" 277 L: L 9.5", W 1.72", H 1"	L: L 19.25", W 1.72", H 1" H: L 11.75", W 3.25", H 1.25"	L: L 19.25", W 1.72", H 1"	Case Qty	25 pieces
Weight	14 ounces	15 ounces	32.8 ounces	34 ounces		
Case Qty	50 pieces	50 pieces	25 pieces, except the WH7-120-H: 16 pcs/case	25 pieces		

FLUORESCENT

CANADIAN UL LISTED WORKHORSE BALLASTS



Model No.	Description	Model No.	Description
CWH2-120-BLS	WH2, 120V, Cube Case, BLS	CWH3-277-L	WH3, 277V, Long Case
CWH2-120-C	WH2, 120V, Cube Case	CWH33-120-BLS	WH33, 120V, Cube Case, BLS
CWH2-120-L	WH2, 120V, Long Case	CWH33-120-C	WH33, 120V, Cube Case
CWH22-120-BLS	WH22, 120V, Cube Case, BLS	CWH33-120-L	WH33, 120V, Long Case
CWH22-120-C	WH22, 120V, Cube Case	CWH4-120-L	WH4, 120V, Long Case
CWH22-120-L	WH22, 120V, Long Case	CWH5-120-L	WH5, 120V, Long Case
CWH22-277-C	WH22, 277V, Cube Case	CWH5-120-LR	WH5, 120V, Long Case, RoHS Compliant
CWH22-277-L	WH22, 277V, Long Case	CWH6-120-L	WH6, 120V, Long Case
CWH3-120-BLS	WH3, 120V, Cube Case, BLS	CWH7-120-H	WH7, 120V, H CAN
CWH3-120-C	WH3, 120V, Cube Case	CWH7-120-L	WH7, 120V, Long Case
CWH3-120-L	WH3, 120V, Long Case	CWH8-120-L	WH8, 120V, Long Case

NOTE: For Canadian WorkHorse Ballasts, refer to pages 55-59 for compatibility with lamp sizes T6 and larger.



Refer to pages 53-59 for lamp compatibility.

Refer to pages 60 and 61 for wiring diagrams



SPECIFIER GRADE T8/T12 FLUORESCENT ELECTRONIC BALLASTS



FEATURES

- Drop In Replacement for Magnetic Ballasts
- Parallel Lamp Operation
- Specifier Grade = < 10% ATHD
- High Ballast Factor (1.18) Available
- Low Ballast Factor (0.78) Available

APPLICATIONS

- Offices
- Schools
- Hotels
- Apartments
- Retirement Complexes
- Industrial
- Retail Stores



COMMON SPECIFICATIONS

Power Factor:	98.5 % Min.
ATHD:	Less than 10%
EMI: FCC CFR Title 47 Part 18 non-consumer	
Ballast Factor::	>.87
Lamp CF:	< 1.7
Starting Method:	T8: Instant Start T12H0: Modified Rapid Start
Regulatory Approvals:	UL & cULus Listed Type1 or Type 2
Min. Starting Temp. :	0°F (-18°C)
Inherent Thermal Protection:	Class P
Transient Protection:	C62.41 Class A 7 strikes
Ballast Sizes:	T8: L 9.5", W 1.38", H 1.0" (H 25mm, W 35mm, L 240mm) T12H0: L 11.75", W 2.3", H 1.6" (H 41mm, W 58mm, L 299mm)
Weights:	T8: 1.5 lbs. (700g) T12H0: 4.0 lbs. (1.8 kg)

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
Universal Voltage for T8 - (Instant Start) <10% ATHD		
WHS G1-UNV-T8-IS	1 x	F17T8, F25T8, F32T8, F40T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
WHS G2-UNV-T8-IS	1 x	F17T8, F25T8, F32T8, F40T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
	2 x	F17T8, F25T8, F32T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
WHS G3-UNV-T8-IS	2 x	F25T8, F32T8, F40T8
	3 x	F17T8, F25T8, F32T8
WHS G4-UNV-T8-IS	3 x	F25T8, F32T8, F40T8
	4 x	F17T8, F25T8, F32T8
WHS G8-UNV-T8 SL	1 x	F96T8, F96T8H0,
	2 x	F96T8
Dedicated Voltage for T12H0 - (Rapid Start) <10% ATHD		
	1 x	F96T12H0, F96T12/ESHO
WHS G7-120-T12 H0	2 x	F96T12H0, F72T12H0, F60T12H0, F48T12H0, F96T12/ES/HO

FLUORESCENT

Model No.	WHS G1-UNV-T8-IS	WHS G2-UNV-T8-IS	WHS G3-UNV-T8-IS	WHS G4-UNV-T8-IS	WHS G7-120-T12 H0	WHS G8-UNV-T8 SL
Input Voltage	120V-277V 50/60Hz	120V-277V 50/60Hz	120V-277V 50/60Hz	120V-277V 50/60Hz	120V 50/60Hz	120V-277V 50/60Hz
Input Power	33W	59W	85W	112W	200W	109W
Max. Current	.28 AMP	.50 AMP	.71 AMP	.93 AMP	1.65 AMP	.92 AMP
Black/White Wires	24"	24"	24"	28"	22"	25"
Red Wires	46"	46"	46"	30"	46"	79"
Blue Wires	32"	32"	32"	30"	46"	46"
Yellow Wires	N/A	N/A	N/A	46"	70"	N/A
Case Qty	25 pieces	25 pieces	25 pieces	25 pieces	10 pieces	25 pieces
CEE		✓	✓	✓		

CEE Lamp Ballast Combinations: These ballasts meet new, high efficiency standards in combination with T8 four foot lamps. Please contact Fulham Customer Service for details.



SPECIFIER GRADE T8 FLUORESCENT HIGH & LOW BALLAST FACTOR ELECTRONIC BALLASTS

FEATURES

- Drop In Replacement for Magnetic Ballasts
- Parallel Lamp Operation
- Specifier Grade = < 10% ATHD
- High Ballast Factor (1.18) Available
- Low Ballast Factor (0.78) Available

APPLICATIONS

- Offices
- Schools
- Hotels
- Apartments
- Retirement Complexes
- Industrial
- Retail Stores



COMMON SPECIFICATIONS

Power Factor:	98.5% Min.
ATHD:	Less than 10%
EMI: FCC CFR Title 47 Part 18 non-consumer	
Ballast Factor:	> .87
Lamp CF:	< 1.7
Starting Method:	T8: Instant Start
Regulatory Approvals:	UL & cULus Listed Type 1 or Type 2
Min. Starting Temp.:	0°F (-18°C)
Inherent Thermal Protection:	Class P
Transient Protection:	C62.41 Class A 7 strikes
Ballast Size:	L 9.5", W 1.38", H 1.0"
LB 2-4, HB 2-3	(H 25mm, W 35mm, L 240mm)
HB 4	L 9.5", W 1.7", H 1.2"
	(H 30mm, W 43mm, L 240mm)
Weight:	1.5 lbs. (700g)

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
Universal Voltage for High and Low Ballast Factor T8 Applications		
WHSG2-UNV-T8-LB	1 x	F25T8, F32T8, F40T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
	2 x	F17T8, F25T8, F32T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
WHSG2-UNV-T8-HB	1 x	F32T8, F40T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
	2 x	F32T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
WHSG3-UNV-T8-LB	2 x	F32T8, F40T8
	3 x	F17T8, F25T8, F32T8
WHSG3-UNV-T8-HB	2 x	F25T8, F32T8, F40T8
	3 x	F17T8, F25T8, F32T8
WHSG4-UNV-T8-LB	3 x	F25T8, F32T8, F40T8
	3 x	F25T8, F32T8, F32T8/ES/25, F32T8/ES/28, F32T8/ES/30, F40T8
WHSG4-UNV-T8-HB	3 x	F25T8, F32T8, F32T8/ES/25, F32T8/ES/28, F32T8/ES/30
	4 x	F25T8, F32T8, F32T8/ES/25, F32T8/ES/28, F32T8/ES/30

FLUORESCENT

Model No.	WHSG2-UNV-T8-LB	WHSG2-UNV-T8-HB	WHSG3-UNV-T8-LB	WHSG3-UNV-T8-HB	WHSG4-UNV-T8-LB	WHSG4-UNV-T8-HB
Input Voltage	120V-277V 50/60Hz	120V-277V 50/60Hz	120V-277V 50/60Hz	120V-277V 50/60Hz	120V-277V 50/60Hz	120V-277V 50/60Hz
Input Power	52W	74W	76W	104W	98W	146W
Max. Current	.44 AMP	.62 AMP	.64 AMP	.91 AMP	.82 AMP	1.24 AMP
Black/White Wires	24"	24"	24"	24"	24"	24"
Red Wires	46"	46"	46"	46"	46"	30"
Blue Wires	32"	32"	32"	32"	32"	30"
Yellow Wires						46"
Case Qty	25 pieces	25 pieces	25 pieces	25 pieces	25 pieces	25 pieces
CEE	✓	✓	✓	✓	✓	✓

CEE Lamp Ballast Combinations: These ballasts meet new, high efficiency standards in combination with T8 four foot lamps. Please contact Fulham Customer Service for details.



HIGH EFFICIENCY & PROGRAM START T8 FLUORESCENT ELECTRONIC BALLASTS

FEATURES

- WHHE: Instant Start
- WHPS: Program Start for Long Lamp Life
- High Efficiency
- Multiple Lamp Operation
- WHHE: CEE Qualified

APPLICATIONS

- Decorative Lighting
- Indoor Architectural Lighting
- Outdoor Architectural Lighting
- Commercial and Industrial Lighting



COMMON SPECIFICATIONS

Operating Voltage:	WHHE: 120-277VAC (UNV) WHPS: 120-277VAC (UNV) $\pm$ 10%	Ballast Maximum Case Temp.:	WHHE: 194°F (90°C) WHPS: 158°F (70°C)
Frequency:	50/60Hz	Ballast Lamp Starting Mode:	WHHE: Instant Start WHPS: Program Start
Power Factor:	WHHE: 98% WHPS: 98.6% Min.	Min. Operating Temp.:	0°F (-18°C)
ATHD:	$\leq$ 10%	Inherent Thermal Protection:	Class P
EMI: FCC CFR Title 47 Part 18 non-consumer		Ballast Size:	L 8.91", W 1.32", H 1.05" (H 26.7mm, W 33.5mm, L 226.3mm)
Ballast Factor:	> .93	Sound Rating	"A"
Lamp CF:	< 1.7	Regulatory Approvals:	UL & cULus Listed Type1 or Type 2 Type HL, CC

FLUORESCENT

Model No.	WHHE-UNV-T8-IS	WHPS1-UNV-T8-PS	WHPS2-UNV-T8-PS	WHPS3-UNV-T8-PS
Starting Method	Instant Start	Program Start	Program Start	Program Start
Max. Load	59W	30W	57W	87W
Max. Current	0.46 AMP	0.25 AMP	0.48 AMP	0.72 AMP
Case Quantity	25 pieces	25 pieces	25 pieces	25 pieces
CEE	✓	✓	✓	✓

CEE Lamp Ballast Combinations: These ballasts meet new, high efficiency standards in combination with T8 four foot lamps. Please contact Fulham Customer Service for details.

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
WHHE2-UNV-T8-IS	1 x	F40T8
	1 or 2	F32 / FB32 / FB31 / FB28 / F25 / F17 T8; F32T8/ES/30; F32T8/ES/28; F32T8/ES/25
WHPS1-UNV-T8-PS	1 x	F32T8, FB32T8, FB31T8, FB28T8, F32T8/ES/30, F32T8/ES/28, F32/ES/25
WHPS2-UNV-T8-PS	2 x	F32T8, FB32T8, FB31T8, FB28T8, F32T8/ES/30, F32T8/ES/28, F32/ES/25
WHPS3-UNV-T8-PS	3 x	F32T8, FB32T8, FB31T8, FB28T8, F32T8/ES/30, F32T8/ES/28, F32/ES/25



WORKHORSE™ COMMERCIAL GRADE

COMMERCIAL GRADE T8/T12 FLUORESCENT ELECTRONIC BALLASTS

APPLICATIONS

- Offices
- Retirement Complexes
- Schools
- Industrial
- Hotels
- Retail Stores
- Apartments



COMMON SPECIFICATIONS

Power Factor:	97.5% Min.
ATHD:	Less than 20%
EMI: FCC CFR Title 47 Part 18 non-consumer	
Ballast Factor::	> .87
Lamp CF:	< 1.7
Starting Method:	WHCG1-4: Instant Start WHCG5 & 6: Rapid Start
Regulatory Approvals:	UL & cULus Listed Type 1 or Type 2
Min. Starting Temp. :	0°F (-18°C)
Inherent Thermal	Class P
Protection:	
Ballast Size:	L 9.5", W 1.7", H 1.2" (H 30mm, W 43mm, L 240mm)
Weight:	1.7 lb. (760g)

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
Dedicated Voltage (120V) for T8 - (Instant Start) <20% ATHD		
WHCG1-120-T8-IS	1 x	F17T8, F25T8, F32T8
WHCG2-120-T8-IS	1 x	F25T8, F32T8, F40T8, FB031T8
	2 x	F17T8, F25T8, F32T8, FB031T8
WHCG3-120-T8-IS	2 x	F25T8, F32T8, F40T8
	3 x	F17T8, F25T8, F32T8
WHCG4-120-T8-IS	2 x	F40T8
	3 x	F17T8, F25T8, F32T8, F40T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
	4 x	F17T8, F25T8, F32T8, FB031T8, F32T8/30, F32T8/28, F32T8/25
Dedicated Voltage for T12 - (Rapid Start) <20% ATHD		
WHCG5-120-T12 RS	1 x	F36T8, F34T12, F40T12
	2 x	F18T8, F36T8, F40T8, F20T12, F34T12, F40T12
WHCG6-120-T12 RS	1 x	F18T8, F36T8, F20T12, F34T12, F40T12
	2 x	F18T8, F20T12

IS: Instant Start - RS: Rapid Start

Model No.	WHCG1-120-T8-IS	WHCG2-120-T8-IS	WHCG3-120-T8-IS	WHCG4-120-T8-IS	WHCG5-120-T12 RS	WHCG6-120-T12 RS
Input Voltage	120V 60Hz (108V-132V)	120V 60Hz (108V-132V)	120V 60Hz (108V-132V)	120V 60Hz (108V-132V)	120V 60Hz (108V-132V)	120V 60Hz (108V-132V)
Input Power	30W (with T8 32W lamp)	58W (with T8 32W lamp)	85W (with T8 32W lamp)	112W (with T8 32W lamp)	74W (with T12 40W lamp)	36W (with T12 20W lamp)
Max. Current	.26 AMP	.50 AMP	.71 AMP	.93 AMP	.62 AMP	.31 AMP
Black/White Wires	24"	24"	24"	28"	24"	24"
Red Wires	48"	48"	48"	30"	32"	32"
Blue Wires	32"	32"	32"	30"	32"	32"
Yellow Wires	N/A	N/A	N/A	46"	48"	48"
Case Qty	25 pieces	25 pieces	25 pieces	25 pieces	25 pices	25 pieces
CEE				✓		

NOTE: WorkHorse Commercial Grade 277V available for models 1-5 while supplies last. Contact Customer Service for details.



LINEAR, COMPACT
& CIRCLE LAMP
ELECTRONIC BALLASTS



COMMON SPECIFICATIONS

Operating Voltage:	120VAC±10% or 230VAC±10%	Regulatory Approvals:	UL & cULus Listed Type 1 or Type 2
Frequency:	50/60Hz	EMI: FCC CFR Title 47 Part 18 non-consumer	
Starting Type:	Rapid Start	Sound Rating:	"A"
Starting Temperature:	14°F (-10°C)	CCF:	< 1.7
Ballast Max Case Temperature:	158°F (70°C)	Normal Power Factor:	> .5
Transient Protection:	C62.41 Class A 7 strikes		

LAMP OPERATION

SUGARCUBES FOR T5, T8, T12

Model Number	Operates Lamps
SC-120-115-CT8	1 x F14T8, F15T8, F17T8, F14T12, F15T12
SC-120-120-CT12	1 x F20T12
Ballast Size: L 3.09", W 1.45", H 1"	
SC-120-108-LT5	1 x F6T5, F8T5
SC-120-113-LT5	1 x F13T5, F14T5
SC-120-120-LT12	1 x F20T12
Ballast Size: L 4.76", W 1.05", H .76"	
SC-120-128-LT5	1 x F21T5, F28T5
Ballast Size: L 5.91", W 1.09", H 1.04"	
SC-120-115-T8XL	1 x F14T8, F15T8, F14T12, F15T12
SC-120-125-T8XL	1 x F17T8, F25T8
Ballast Size: L 6.30", W .95", H .73"	
SC-120-117-LT8	1 x F15T8, F17T8
SC-120-132-T8XL	1 x F15T8, F17T8, F25T8, F32T8
Ballast Size: L 6.30", W 1.08", H 1.01"	
SC-120-125-LT8	1 x F17T8, F25T8
Ballast Size: L 4.76", W .95", H .73"	
SC-120-208-LT5	1 x F13T5, F14T5, F6T5+F8T5 2 x F6T5, F8T5
Ballast Size: L 5.53", W 1.27", H 1.01"	

SUGARCUBES FOR CFL, CIRCLE & T8

SC-120-113-CFL	1 x 13CFQ/E, F15T8, F17T8, 13W Spiral
Ballast Size: L 3.09", W 1.45", H 1"	

SUGARCUBES FOR UV LAMPS

Model Number	Operates Lamps
SC-120-287-CUV	1 x 180mm T5 UV, 287mm T5 UV
SC-120-287-CUV-R†	
SC-230-287-CUV	
SC-230-287-CUV-R†	
Ballast Size: H 1", W 1.46", L 3.07"	

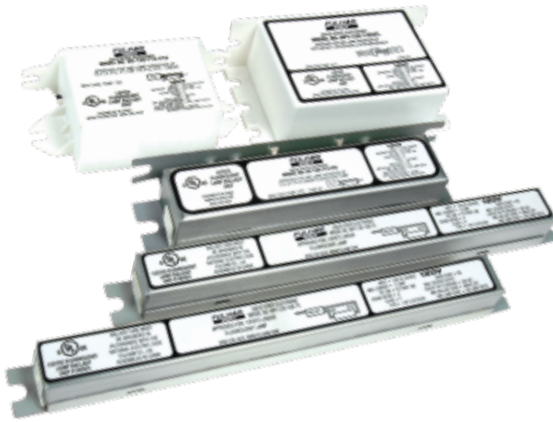
(See page 19 for additional UV ballasts under the SunHorse brand.)

SUGARCUBES FOR 230V LAMPS (not UL listed)

Model Number	Operates Lamps
SC-230-118-CFL	1 x 18CFQ/E, 18CFTR/E
Ballast Size: L 78.3mm, W 37mm, H 25.4mm	

FLUORESCENT





LAMP OPERATION

PONY FOR CFL

Model Number	Operates Lamps
NPY-120-118-CFL	1 x 13CFT/E, 18CFQ/E, 18CFTR/E
Ballast Size: H 1.03", W 1.76", L 3.36"	
NPY-120-118-BL	1 x 13CFT/E, 18CFQ/E, 18CFTR/E
Ballast Size: L 3.34", W 1.77", H 1"	
NPY-120-126-CFL	1 x 18CFT/E, 24/27CFT/E, 26CFQ/E, 26CFTR/E, 32CFTR/E, 22CRT9
NPY-120-126-BLS	1 x 18CFT/E, 24/27CFT/E, 26CFQ/E, 26CFTR/E, 32CFTR/E, 22CRT9
Ballast Size: L 3.36", W 2.39", H 1.02"	
NPY-120-213-CFL	2 x 7CFT/E, 9CFT/E, 13CFQ/E, 13CFTR/E
NPY-120-218-CFL	2 x 13CFT/E, 18CFQ/E, 18CFTR/E
Ballast Size: L 3.36", W 2.39", H 1.02"	
NPY-120-226-CFL	2 x 18CFT/E, 24/27CFT/E, 26CFQ/E, 26CFTR/E, FC22T9
NPY-120-232-CFL	2 x 36/39CFT/E, 32CFTR/E, 32CRT9
Ballast Size: L 3.83", W 3.11", H 1.01"	

PONY FOR CIRCLE

NPY-120-240-CR	1 x FC8T9-22W + FC12T9-32W, 1 x FC12T9-32W + FC16T9-40W
Ballast Size: H 1.04", W 3.11", L 3.84"	
NPY-120-126-CR	1 x FC8T9-22W
NPY-120-132-CR	1 x FC12T9-32W
Ballast Size: L 3.36", W 2.39", H 1.02"	

PONY T5

Model Number	Operates Lamps
NPY-120-214-LT5	1 or 2 x F14T5
NPY-120-228-LT5	1 or 2 x F28T5
Ballast Size: L 11.5", W 1.01", H 1.01"	

PONY T8

NPY-120-232-LT8	1 or 2 x F32T8 2 x F25T8, F40 / F34 / F30 / F25 T12 1 x F32T8 + F25T8, 1 x F32T8 + F17T8
NPY-120-217-LT8	2 x F17T8 or F20T12
Ballast Size: L 12.01", W .96", H .83"	
NPY-120-232-T8IS*	1 or 2 x F32T8, FB031T8, F25T8, FB024T8, F17T8, FB016T8, F32T8 (30/28W), F20T12, F25T12, F30T12, F34T12, F40T12
Ballast Size: L 6.5", W 1.41", H 1"	
NPY-120-432 T8IS	2 x F40T8 3 x F17T8, F25T8, F32T8, F40T8, F32T8 (30W/28W/25W), FB031T8, FB024, FB016, F20T12, F25T12, F30T12, F34T12, F40T12 4 x F17T8, F25T8, F32T8, F32T8 (30W), FB031T8, FB024, FB016, F20T12, F25T12, F30T12, F34T12, F40T12
Ballast Size: L 9.45", W 1.32", H 1.06"	

PONY FOR T8, T12

NPY-120-130-T8	1 x F30T8, F30T12
Ballast Size: H .96", W .90", L 6.72"	
NPY-120-140-T8	1 x F32T8, F40T8, F40T12
Ballast Size: H .96", W 1.85", L 6.72"	
NPY-120-230-T8	2 x F30T8, F30T12
NPY-120-240-T8	2 x F32T8, F40T8, F40T12
Ballast Size: L 9.49", W 1.74", H 1.02"	



FLUORESCENT REMOTE MOUNT ELECTRONIC BALLASTS

FEATURES

- Operates up to 20 ft. from Lamp
- Versatile
- High Power Factor
- Energy Saving
- Lightweight
- Solid-State Electronics

**6 BALLASTS
OPERATE 124 LAMPS
IN 628 COMBINATIONS**



COMMON SPECIFICATIONS

Operating Voltage:	120VAC $\pm$ 10% 277VAC $\pm$ 10%	Regulatory Approvals:	UL Listed Type 1 or Type 2
Frequency:	50/60Hz	High Power Factor:	> .90
ATHD:	Meets ANSI C82.11-1993	Open Circuit Voltage:	600 V RMS Max.
Protection/Output:	Open Lamp and Shorted Lamp	Ballast Min. Operating Temp.:	-20°F (-30°C)
Protection/Input:		Ballast Maximum Case Temp.:	158°F (70°C)
Over Current:	Fuse	Ballast Lamp Starting Mode:	Instant Start
Transient Protection:	C62.41 Class A 7 strikes	Inherent Thermal Protection	Class P
EMI: FCC CFR Title 47 Part 18 non-consumer		Sound Rating	"A"

NOTE: Frequently switched, short duration ON/OFF cycles with any Instant Start ballast will reduce lamp life. Please contact your lamp manufacturer for details.

	LONGHORSE 1	LONGHORSE 2	LONGHORSE 3	LONGHORSE 4	LONGHORSE 5	LONGHORSE 6
Model No. 120V	LH1-120-L	LH2-120-L	LH3-120-L	LH4-120-L	LH5-120-L	LH6-120-L
Max. Current 120VAC	0.26 AMP	0.36 AMP	0.61 AMP	0.65 AMP	1.25 AMP	1.25 AMP
Model No. 277V	LH1-277-L	LH2-277-L	LH3-277-L	LH4-277-L	LH5-277-L	LH6-277-L
Max. Current 277VAC	0.10 AMP	0.15 AMP	0.25 AMP	0.22 AMP	0.48 AMP	0.50 AMP
Max. Power	28W	35W	64W	70W	128W	140W
Black/White Wires	18"	18"	18"	18"	18"	18"
Red/Yellow Wires	36"	36"	36"	36"	36"	36"
Ballast Sizes	H 1", W 1.5", L 6.5"	H 1", W 1.72", L 9.5"	H 1", W 1.72", L 9.5"	H 1", W 1.72", L 9.5"	120: H 1", W 1.72", L 13.3" 277: H 1", W 1.72", L 16"	120: H 1", W 1.72", L 13.3" 277: H 1", W 1.72", L 16"
Weight	7 ounces	14 ounces	14 ounces	14 ounces	120: 24 ounces 277: 26.4 ounces	120: 22.4 ounces 277: 27.2 ounces
Case Qty	50 pieces	50 pieces	50 pieces	50 pieces	25 pieces	25 pieces

CANADIAN UL LISTED LONGHORSE BALLASTS



Model No.	Description
CLH1-120-L	WH1 for Remote Mounting
CLH2-120-L	WH2 for Remote Mounting
CLH3-120-L	WH3 for Remote Mounting
CLH4-120-L	WH4 for Remote Mounting
CLH5-120-L	WH5 for Remote Mounting
CLH6-120-L	WH6 for Remote Mounting

NOTE: For Canadian LongHorse Ballasts, refer to pages 55-59 for compatibility with lamp sizes T6 and larger.

 Refer to pages 53-59 for lamp compatibility.
Refer to pages 60 and 61 for wiring diagrams

FULHAM**LIGHTINGCONTROLS™****0-10V DIMMABLE FLUORESCENT
ELECTRONIC BALLASTS****FEATURES**

- Easily installs in standard lighting fixtures to protect your fixture investment
- Allows for material energy savings in conjunction with Fulham Lighting Controls devices; see pages 14 - 15
- Utilizes microprocessor technology to provide more performance at less cost
- RoHS and CEE/NEMA High Performance varieties available
- Programmed Start
- Series Sequential Circuit Type
- Universal Voltage 120V - 277V



Model Number	Certifications	Lamp Compatibility
HSM-UNV-114-LT5	  	1 x F35T5, F28T5, F21T5, F14T5
HSM-UNV-126-C	  	1 x FT18W/2G11, FT24W/2G11, CFQ26/GXq, CFTR26W/GX24q, FC9T5, FC12T5
HSM-UNV-132-C	  	1 x CFTR32W/GX24q, FT40W/2G11/RS, FT36W/2G11, FC9T5, FC12T5
HSM-UNV-139-LT5	  	1 x F39T5H0, F24T5H0
HSM-UNV-142-C	  	1 x CFTR42W/GX24q, FT40W/2G11/RS, FT36W/2G11, FC9T5, FC12T5
HSM-UNV-154-LT5	 	1 x F54T5H0, FT55W/2G11/RS, FT50W/2G11/RS, F58T8
HSM-UNV-214-LT5	 	2 x F35T5, F28T5, F21T5, F14T5
HSM-UNV-239-LT5	 	2 x F39T5H0, F24T5H0, FT40/2G11/RS, FT36W/2G11, FT24W/2G11, FT18W/2G11, FC12T5, FC9T5
HSM-UNV-254-LT5	  	2 x F54T5H0, FT55W/2G11/RS, FT50W/2G11, F58T8

FLUORESCENT



FLUORESCENT LOW TEMPERATURE ELECTRONIC BALLASTS



FEATURES

- A Dynamic Ballast that automatically synchs/adjusts in cold temperatures to provide optimal light output
- Universal Voltage 120V-277V
- High Power Factor
- Deactivated Lamp Protection
- Fault Condition Protection
- Programmed Pre-Heat Start
- Minimum Starting Temperature -30°C/-22°F
- No PCBs
- Low ATHD < 10%
- 18' Remote Mountable
- Type "HL" approved for hazardous locations

APPLICATIONS

- Refrigerator Cases
- Freezer Cases
- Vending Machines
- Coolers
- Consistently Cold Outdoor Locations



**REACTIVE
CIRCUIT
INSIDE**



**STANDARD
MOLEX® CONNECTORS**

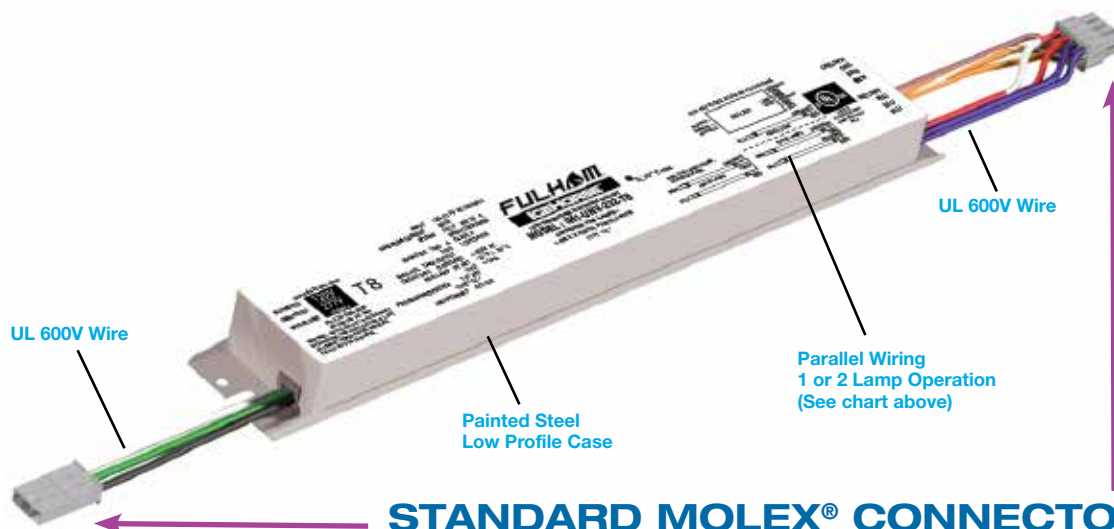
COMMON SPECIFICATIONS

Input Voltage	120V-277V (UNV)
Input Voltage Range	± 10%
Power Line Frequency	50/60Hz
High Power Factor	> 0.98
ATHD	< 10%
Re-Lamping Circuit	Deactivated Lamp Protection
Current Protection	Fuse
Lamp Operation Mode	Programmed Start
Lamp Connection	Parallel
Ignition Method	Programmed Pre-Heat Start
Lamp Current Crest Factor	< 1.7
Transient Protection:	C62.41 Class A 7 strikes
Circuit to Ground	< 600 VAC
UL / cULus Listed	Type 1 Outdoor
Type "CC" Rated	Anti-Arc
Thermal Protection	Class "P"
EMI/RFI Compliance	FCC Part 18 non-consumer
Sound Rating	A
Minimum Operating Temperature	-30°C (-22°F)
Maximum Case Temperature	70°C (158°F)
Ballast Case Construction	Painted Steel
Input/Output Connections	Wire Leads + Connectors
Potted	Yes
Warranty	3 years

	ICEHORSE 1	ICEHORSE 2	ICEHORSE 3
Model No.	IH1-UNV-232-T8	IH2-UNV-270-T8	IH3-UNV 272 T12H0
Max. Current	.85 AMP	1.35 AMP	1.38 AMP
Max. Power	100W	155W	150W
Common Ballast Size	L 12", W 1.7", H 1" L 304.80mm, W 43.18mm, H 25.4mm		
Weight	1.4 lbs	1.5 lbs	1.4 lbs
Case Qty	25 pcs.	25 pcs.	25 pcs.

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
IH1-UNV-232-T8	1 or 2	F25 / F32 / F40 T8
IH2-UNV-270-T8	1 or 2	F58 / F70 T8
IH3-UNV 272 T12H0	1 or 2	F48 / F60 T8H0
		F48 / F60 T10VH0
		F48 / F60 / F72 T12H0
		F72T8H0, F72T10VH0, F96T12VH0



STANDARD MOLEX® CONNECTORS
FOR PLUG-N-PLAY COMMERCIAL REFRIGERATION APPLICATIONS


SUNHORSE™

DIMMABLE & STANDARD ELECTRONIC BALLASTS FOR UV & TANNING

COMMON SPECIFICATIONS

Frequency	50/60Hz
Protection Output	Yes
Protection Input	Fuse/MOV
Over Current	Yes
Transient Protection	C62.41 Class A 7 strikes
EMI	FCC PART 18 non-consumer

Regulatory Approvals	UL/cULus as indicated in chart below
Class P Inherent	Type 1 Outdoor
Thermal Protection	
Sound Rating	"A"



	Standard Models (Non-Dimming)	Operating Voltage	Max. Input Current	Rated Max. Load	Min. Operating Temp.	Max Case Temp.	Ballast Dimensions
FOR UV	SHS4-120-C	120VAC	0.303A	21W	0°C (32°F)	75°C (167°F)	H 1", W 1.45", L 3.09"
	SHS1-UNV-C	120-277VAC	0.408A	42W	0°C (32°F)	75°C (167°F)	H 1.00", W 2.36", L 5.05"
	SHS1-UNV-C-I*	120-277VAC	0.408A	42W	0°C (32°F)	75°C (167°F)	H 1.00", W 2.36", L 5.05"
	SHS5-024-C	24VAC	2.59A	42W	0°C (32°F)	75°C (167°F)	H 1.01", W 3.12", L 3.64"
FOR UV & TANNING	FEP-120-600-L	120VAC	2.86A	320W	-18°C (0°F)	70°C (158°F)	H 1.25", W 3", L 19.25"
	FEP-210-600-L	210VAC	1.52A	320W	0°C (32°F)	70°C (158°F)	H 1.25", W 3", L 19.25"
	FEP-230-600-L	230VAC	1.50A	320W	-18°C (0°F)	70°C (158°F)	H 1.25", W 3", L 19.25"
	SHGS1 MID 2 200 L	208-240VAC	1.85A	380W	0°C (32°F)	75°C (167°F)	H 1.73", W 3.11", L 12"
	SHGS2 MID 4 100 L	208-240VAC	1.88A	380W	0°C (32°F)	75°C (167°F)	H 1.73", W 3.11", L 12"
	SHGS3 MID 6 100 L	208-240VAC	2.50A	600W	0°C (32°F)	75°C (167°F)	H 1.77", W 3.11", L 16"

Dimming Models



DIMMING FEATURES

Instant Start with 0-10V dimming control and linear (smooth) dimming from 100-70%.

SHGD1 MID 2 200 L	208-240VAC	1.71A	400W	0°C (32°F)	75°C (167°F)	H 1.73", W 3.11", L 12"
SHGD2 MID 4 100 L	208-240VAC	1.74A	400W	0°C (32°F)	75°C (167°F)	H 1.73", W 3.11", L 12"
SHD21-230-L	230VAC	1.64A	320W	0°C (32°F)	70°C (158°F)	H 1.18", W 1.72", L 16.69"
SHD21-230-L-I*	230VAC	1.64A	320W	0°C (32°F)	70°C (158°F)	H 1.18", W 1.72", L 16.69"

*These models feature an indicator for lamp operation.

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
SHS4-120-C	1 x	GPH500T5L
	1 x	TUV36W, 38W / 41W T5
SHS1-UNV-C	1 or 2	10W / 14W / 15W / 17W / 21WT5, TUV18W
	1 x	TUV36W, 38W / 41W T5
SHS1-UNV-C-I	1 or 2	10W / 14W / 15W / 17W / 21WT5, TUV18W
	1 x	TUV36W, 38W / 41 WT5
SHS5-024-C	1 or 2	T3 12", T3 17", 10W / 14W / 15W / 17W / 21W T5, TUV 18W
	1 x	F79 (200W) T12HO
	2 x	F72 (160W) / F79 (200W) T12HO
		F24 / F30 / F36 / F48 / F59 (85W) / F60 / F64 / F72 / F72 (100W) / F84 / F84 (120W) T12HO
FEP-120-600-L	3 x	
	4 x	F24 / F30 / F36 / F48 / F59 (85W) / F60 / F64 / F72 / F72 (100W) T12HO

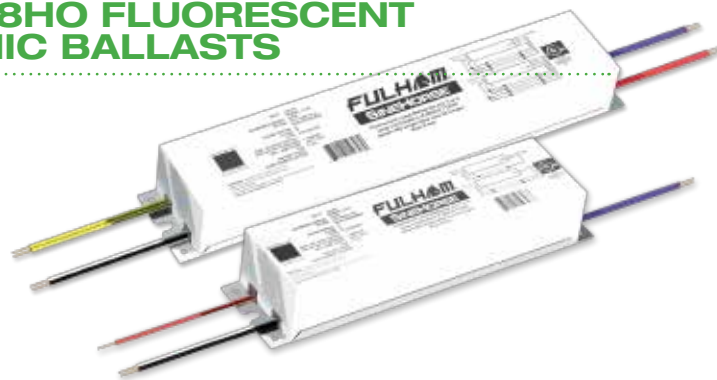
LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
	1 x	F79 (200W) T12HO
FEP-210-600-L	2 x	F59 (85W) / F72 (100W) T12HO, F72 (160W) / F79 (200W) T12VHO
	3 or 4	F59 (85W) / F72 (100W) T12HO
FEP-230-600-L	2 x	F72 (160W) / F79 (200W) T12VHO
	3 or 4	F59 (85W) / F72 (100W) T12HO
SHGD1 MID 2 200 L	1 or 2	F59 / F60 / F71 / F72 / F73 / F74 / F79 T12VHO
SHGD2 MID 4 100 L	3 or 4	F59 / F71 / F72 / F73 T12HO
SHD21-230-L	1 x	GPHHA1554T6L (320W UV T6)
SHD21-230-L-I	1 x	GPHHA1554T6L (320W UV T6)

FLUORESCENT

FULHAM**SINEHORSE™****T12HO & T8HO FLUORESCENT
ELECTRONIC BALLASTS****FEATURES**

- Instant Start
- Energy Efficient / Green Responsible
- Reduced Installation and Maintenance Cost
- Reduced Weight and Profile for Signage
- Lower Inventory Carrying Cost with just 3 SKUs

**COMMON SPECIFICATIONS**

Operating Voltage:	120V - 277V (UNV)	Input Protection	Fuse
Frequency:	50/60Hz	Lamp Current Regulation	±5%
ATHD:	< 10%	Starting Temperature	-29°C (-20°F)
Power Factor	>90%	Operating Temperature	29°C - 50°C
EMI: FCC 47 CFR Part 18 Consumer		Max Case Temperature	70°C
Min./Max. Lamp Length Per Output	2' / 10'	RMS Open Circuit	<1000V
Lamp Configuration	Parallel	Sound Rating:	"A"
Regulatory Approvals:	cULus Listed Type 2 Outdoor	Transient Protection:	C62.41 Class A 7 strikes

Model No.	SN1-UNV-1324-IS	SN2-UNV-2432-IS	SN3-UNV-4650-IS
Input Current	1.55A	2.1A	3.2A
Lamp Load Min/Max	2ft-24ft with 1, 2 or 3 Lamps	4ft-32ft with 2, 3 or 4 Lamps	8ft-50ft with 4, 5 or 6 Lamps
Ballast Size	1.8" H, 2.8"W, 12" L	1.8" H, 2.8"W, 12" L	1.92" H, 2.83" W, 14.37" L

MODEL SELECTION CHART

# LAMPS PER BALLAST	TOTAL LAMP FOOTAGE																																	
	2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50								
1, 2 or 3		BL-UNV-1-3-24																																
2, 3 or 4				BL-UNV-2-4-32																														
4, 5 or 6							BL-UNV-4-6-50																											

FULHAM**PONY ET™****DIMMABLE ELECTRONIC TRANSFORMERS****FEATURES**

- Operate Multiple MR16 & MR11 Lamps up to Stated Wattage
- Short Circuit, Overload & Thermal Protection
- cULus (UL recognized components)
- Solid State Electronics

COMMON SPECIFICATIONS

Dimmer Capability: Leading Edge Or Trailing Edge

Maximum Ambient Temperature: 50°C

Auto Reset Electronic Short Circuit
And Overload Protection

High Power Factor, Low Total Harmonic Distortion

Aluminum Case, Waterproof Potting

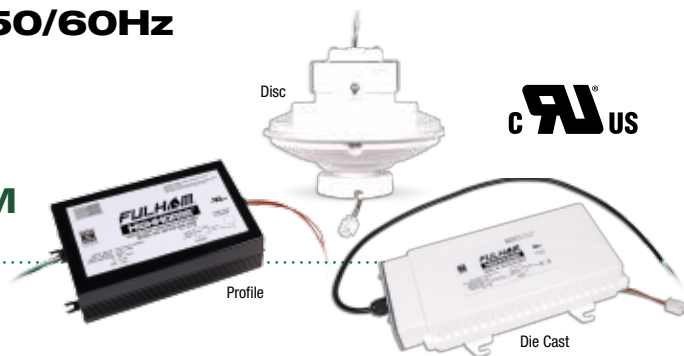
Minimum Load Requirement: 20W



	PONY ET 60W CLASS 2	PONY ET 75W	PONY ET 150W	PONY ET 300W Linear	PONY ET 300W Circular
Model No.	PET-120-12-60	PET-120-12-75	PET-120-12 150W L	PET-120-12 300W L	PET-120-12 300W R
Max. Load	60W	75W	150W	300W	300W
Transformer Size	H 0.78", W 1.29", L 2.08"	H 0.78", W 1.29", L 2.08"	H 1.0625", W 1.375", L 3.375"	H 1.0625", W 1.5", L 5.1875"	H 1.375", Diameter 3.6875", Inside Diameter 0.375"
Lead Wire	6"	6"	6"	6"	6"
Case Qty	100 pieces	100 pieces	60 pieces	48 pieces	42 pieces



INDUCTION LIGHTING SYSTEM GENERATORS



COMMON GENERATOR SPECIFICATIONS

Input Voltage	120V-277V (UNV)	Case Temp.	<65°C
Input Frequency	50/60Hz	Operating Temp.	(0°C to 50°C)
Output Frequency	< 250KHz	Open Fixture	
ATHD	< 10%	Operating Temp.	(-20°C to 50°C)
Power Factor	> 0.95	Closed Fixture	
Constant Wattage Output	± 5%	Max Remote Distance**	7 ft. (84")
EMI/RFI Compliance	FCC Part 18-A	Sound Rating	Class A
Surge Protection	Yes		

CONTACT CLIENT SERVICES FOR THE FOLLOWING OPTIONS:

- Color Temperature: 2720K to 6500K
- Ambient -40°C to 0°C
- Dimming Options
- Replacement Ballast and Lamp
- Remote Mount Options

order@fulham.com | 323-599-5000

**IMPORTANT: Do not modify wiring type or length without contacting Fulham. Special generator can be ordered from Fulham for a maximum remote distance of 49 ft.

BEFORE&AFTER

How can visual acuity actually be improved by replacing a 150W HID system with an 85W HighHorse® Induction system?



150W HPS



85W INDUCTION

The answer is found in how the human eye responds to light and how lighting sources affect vision.

The ratio of Scotopic light vs. Photopic light from a lamp is called the S/P ratio. This ratio determines the apparent visual brightness of a light source. Induction lighting produces a high S/P ratio and this is why the 85W lamp appears as bright or brighter to the human eye than a sodium vapor or metal halide of twice the wattage. Visual Effective Lumens (VEL) is a key factor in vision.

SYSTEM MODEL NUMBERS

HH ILS OR IL OR I B P 35 5K OR 5 10 M OR 5C

HH = HIGHHORSE ILS = INDUCTION LIGHTING SYSTEM B = BULB T = TUBULAR C = CIRCULAR P = PROFILE DS = DISC DC = DIE CAST WATTS COLOR TEMP. 0-10V MANUAL DIMMING COLD START MODEL

EXAMPLES (GENERATOR + TUBULAR, CIRCULAR OR BULB LAMP)

HH ILS CP40 5K

HighHorse Induction Lighting System with a circular lamp and profile generator. 40W and 5K color temp.

HH ILS BP35 5K

HighHorse Induction Lighting System with a bulb lamp and profile generator. 35W and 5K color temp.

HH IL TP150 510M

HighHorse Induction Lighting System with a tubular lamp and profile generator. 150W, 5K color temp., and 0-10V manual dimming.

HH IL TP150 5C

HighHorse Induction Lighting System with a tubular lamp and profile generator. 150W, 5K color temp., with Cold Start capability.



INDUCTION TUBULAR SYSTEMS



System Model Number	Watts	Input Current (Amp) 120V - 277V	Input Power	Rated Initial Luminance (LM)	Efficacy (LM/W) ^{††}	Luminance Maintenance (60K Hrs)	CRI	Color Temp. (Kelvin)	Average Lamp Life (Hours)
HH ILS TP40 5K HH IL TP40 510M*	40	0.35-0.15	42	2800-3000	70-75	70%-75%	> 80	5000K (standard) Additional Color Temps: 2700K, 3000K, 3500K, 4000K, 4100K, 4500K, 6000K, 6500K	100,000
HH ILS TP70 5K HH IL TP70 510M*	70	0.62-0.27	74	4900-5250	70-75				
HH ILS TP80 5K HH ILS TDC80 5K	80	0.70-0.30	84	6000-6400	75-80				
HH ILS TP100 5K HH IL TP100 510M* HH ILS TDC100 5K	100	0.88-0.38	105	7500-8000	75-80				
HH ILS TP120 5K HH ILS TDC120 5K	120	1.05-0.45	126	9000-9600	75-80				
HH ILS TP150 5K HH IL TP150 510M* HH ILS TDC150 5K	150	1.32-0.57	158	12000-12750	80-85				
HH ILS TP200 5K HH IL TP200 510M* HH ILS TDC200 5K	200	1.75-0.76	210	16000-17000	80-85				
HH ILS TP200 5 17 [†] HH IL TP200 510M 17 [†] HH ILS TDC200 5 17 [†]	200	1.75-0.76	210	16000-17000	80-85				
HH ILS TP250 5K HH IL TP250 510M* HH ILS TDC250 5K	250	2.19-0.95	263	21250-22500	85-90				
HH ILS TDC300 5K	300	2.63-1.14	315	25500-27000	85-90				
H I TDC400 5 35 HH ILS TDC400 5K	400	3.50-1.52	420	34000-36000	85-90				

*10M denotes 0-10V Manual Dimming. † This shorter 200W lamp is only 17" long to fit into more fixtures.



INDUCTION CIRCULAR SYSTEMS



System Model Number	Watts	Input Current (Amp) 120V - 277V	Input Power	Rated Initial Luminance (LM)	Efficacy (LM/W) ^{††}	Luminance Maintenance (60K Hrs)	CRI	Color Temp. (Kelvin)	Average Lamp Life (Hours)
HH ILS CP40 5K HH IL CP40 510M* HH ILS CDS40 5K	40	0.35-0.15	42	2800-3000	70-75				
HH ILS CP70 5K HH IL CP70 510M* HH ILS CDS70 5K HI CDS70 5M*	70	0.62-0.27	74	4900-5250	70-75				
HH ILS CP80 5K HH ILS CDS80 5K HH ILS CDC80 5K	80	0.70-0.30	84	6000-6400	75-80				
HH ILS CP100 5K HH IL CP100 510M* HH ILS CDS100 5K HH ILS CDC100 5K HI CDS100 5M*	100	0.88-0.38	105	7500-8000	75-80				
HH ILS CP120 5K HH ILS CDS120 5K HH ILS CDC120 5K	120	1.05-0.45	126	9000-9600	75-80				
HH ILS CP150 5K HH IL CP150 510M* HH ILS CDS150 5K HH ILS CDC150 5K HI CDS150 5M*	150	1.32-0.57	158	12000-12750	80-85	70%-75%	> 80	5000K (standard) Additional Color Temps: 2700K, 3000K, 3500K, 4000K, 4100K, 4500K, 6000K, 6500K	100,000
HH ILS CP200 5K HH IL CP200 510M* HH ILS CDS200 5K HH ILS CDC200 5K HI CDS200 5M*	200	1.75-0.76	210	16000-17000	80-85				
HH ILS CP250 5K HH IL CP250 510M* HH ILS CDS250 5K HH ILS CDC250 5K HI CDS250 5M*	250	2.19-0.95	263	21250-22500	85-90				
HH ILS CDS300 5K HH ILS CDC300 5K HI CDS300 5M*	300	2.63-1.14	315	25500-27000	85-90				
HH ILS CDS400 5K HH ILS CDC400 5K HI CDS400 5M*	400	3.50 - 1.52	420	34000-36000	85-90				

*M denotes 0-10V Manual Dimming.



INDUCTION BULB SYSTEMS



System Model Number	Watts	Input Current (Amp) 120V - 277V	Input Power	Rated Initial Luminance (LM)	Efficacy (LM/W) ^{††}	Luminance Maintenance (60K Hrs)	CRI	Color Temp. (Kelvin)	Average Lamp Life (Hours)
HH ILS BP35 5K	35	0.31-0.13	37	2450-2625	70-75	70%-75%	> 80	5000K (standard) Additional Color Temps: 2700K, 3000K, 3500K, 4000K, 4100K, 4500K, 6000K, 6500K	100,000
HH ILS BP55 5K	55	0.48-0.21	58	4125-4380	75-80				
HH ILS BP85 5K HH ILS BDS85 5K	85	0.74-0.32	89	6375-6800	75-80				
HH ILS BP100 5K HH ILS BDS100 5K	100	0.88-0.38	105	7500-8000	75-80				
HH ILS BP120 5K	120	1.05-0.45	126	9000-9600	75-80				



INDUCTION SCREW-IN LAMPS MOGUL AND MEDIUM-BASED BULB MOGUL-BASED CIRCULAR



H	I	B	P	55	5	B
HH = HIGHHORSE	I = INDUCTION LIGHTING SYSTEM	B = BULB LAMP	P = PROFILE BALLAST	WATTS	COLOR TEMP.	B = E39 Mogul Base D = E26 Edison Base



HH OR H	IL OR I	C	P	200	5	B OR MB
HH = HIGHHORSE	IL = INDUCTION LIGHTING SYSTEM	C = CIRCULAR LAMP	P = PROFILE BALLAST	WATTS	COLOR TEMP.	B = E39 Mogul Base MB = Dimmable with E39 Mogul Base



INDUCTION

System Model Number	Watts	Input Current (Amp) 120V - 277V	Input Power	Rated Initial Luminance (LM)	Efficacy (LM/W) ^{††}	Luminance Maintenance (60K Hrs)	CRI	Color Temp. (Kelvin)	Average Lamp Life (Hours)
HI BP35 5B	35	0.31 - 0.13	37	2450 - 2625	70 - 75	70%-75%	> 80	5000K (standard) Additional Color Temps: 2700K, 3000K, 3500K, 4000K, 4100K, 4500K, 6000K, 6500K	100,000
HI BP35 5D	35	0.31 - 0.13	37	2450 - 2625	70 - 75				
HI BP55 5B	55	0.48 - 0.21	58	4125 - 4380	75 - 80				
HI BP55 5D	55	0.48 - 0.21	58	4125 - 4380	75 - 80				
HI BP85 5B	85	0.74 - 0.32	89	6375 - 6800	75 - 80				
HH IL CP40 5B	40	0.35 - 0.15	42	2800 - 3000	70 - 75				
H I CP40 5MB (dimmable)	40	0.35 - 0.15	42	2800 - 3000	70 - 75				
HH IL CP70 5B	70	0.62 - 0.27	74	4900 - 5250	70 - 75				
H I CP70 5MB (dimmable)	70	0.62 - 0.27	74	4900 - 5250	70 - 75				
HH IL CP80 5B	80	0.70 - 0.30	84	6000 - 6400	75 - 80				
HH IL CP100 5B	100	0.88 - 0.38	105	7500 - 8000	75 - 80				
H I CP100 5MB (dimmable)	100	0.88 - 0.38	105	7500 - 8000	75 - 80				
HH IL CP120 5B	120	1.05 - 0.45	126	9000 - 9600	75 - 80				
HH IL CP150 5B	150	1.32 - 0.57	158	12000 - 12750	80 - 85				
H I CP150 5MB (dimmable)	150	1.32 - 0.57	158	12000 - 12750	80 - 85				
HH IL CP200 5B	200	1.75 - 0.76	210	16000 - 17000	80 - 85				
H I CP200 5MB (dimmable)	200	1.75 - 0.76	210	16000 - 17000	80 - 85				

^{††}LM/W is based on Lamp Power.

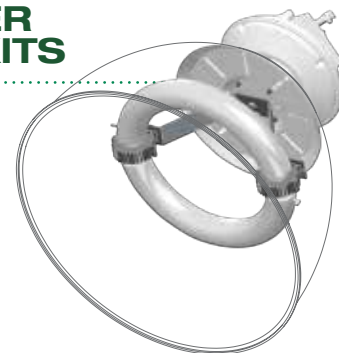


STOCK AND SPECIAL ORDER INDUCTION CONVERSION KITS

HIGHBAY CONVERSION KITS FOR 16", 22" & 25" ACRYLIC REFRACTORS

FEATURES

- Includes lamp, disc generator, hardware and installation instructions
- Circular lamp and Bulb lamp options
- Easy and fast to install
- Thermally tested and fully warranted
- Patent pending components
- IES files available
- UL recognized lamp and generator components



STOCK KITS

The following (7) Induction Kits for 22"/25" acrylic refractors are now stock items:

For 22"/25" Acrylic Refractors:

Kit P/N	System Type
HH ISK C120 HB 22	Circular 120W
HH ISK C150 HB 22	Circular 150W
HH ISK C200 HB 22	Circular 200W
HH ISK C250 HB 22	Circular 250W
HH ISK C150 HB 22M*	Circular 150W
HH ISK C200 HB 22M*	Circular 200W
HH ISK C250 HB 22M*	Circular 250W

SPECIAL ORDER KITS

The (14) kits listed below are special order items and have an (8) week lead time. These are also thermally tested but are build-to-order items:

For 16" Acrylic Refractors:

Kit P/N	System Type
HH ISK B85 HB 16	Bulb 85W
HH ISK B100 HB 16	Bulb 100W
HH ISK C70 HB 16	Circular 70W
HH ISK C80 HB 16	Circular 80W
HH ISK C100 HB 16	Circular 100W
HH ISK C120 HB 16	Circular 120W
HH ISK C150 HB 16	Circular 150W

For 22"/25" Acrylic Refractors:

Kit P/N	System Type
HH ISK B85 HB 22	Bulb 85W
HH ISK B100 HB 22	Bulb 100W
HH ISK C70 HB 22	Circular 70W
HH ISK C80 HB 22	Circular 80W
HH ISK C100 HB 22	Circular 100W
HH ISK C300 HB 22	Circular 300W
HH ISK C400 HB 22	Circular 400W
HH ISK C70 HB 22M*	Circular 70W
HH ISK C100 HB 22M*	Circular 100W
HH ISK C300 HB 22M*	Circular 300W

*M denotes Manual Dimming

INDUCTION

OPTIMAL PERFORMANCE REFLECTOR

Fulham's innovative, patent-pending Optimal Performance Reflector is a recommended add-on component for Fulham HighHorse® brand Highbay Induction Conversion Kits. The Optimal Performance Reflector is compatible with low and high wattage luminaries. It provides comparable performance gains with or without a diffuser lens.

FEATURES

- Increases light output by up to approximately 80% (at 0° to 30° on lit surface)
- UL listed in both the U.S. and Canada
- 5-Year Warranty
- IES files available
- Made in the U.S.A.

Optimal Performance Reflector	Entire Induction Kit Part Number	Acrylic Refractor Diameter	Ambient Certified	Bottom Lens	
				With	Without
HH ILP F000 20	HH ISK C150 HB 22	22"/25" (822/825 Refractor)	50° C	Yes	Yes
HH ILP F000 20	HH ISK C200 HB 22			Yes	Yes
HH ILP F000 20	HH ISK 250 HB 22			Yes	Yes
HH ILP F000 22	HH ISK 300 HB 22			Yes	Yes
HH ILP F000 22	HH ISK 400 HB 22			No	Yes



PATENT PENDING



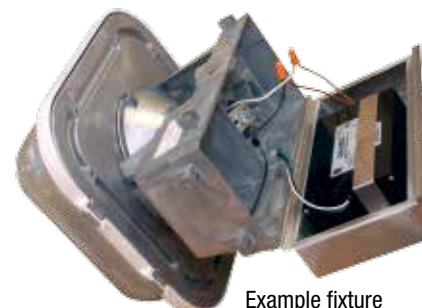
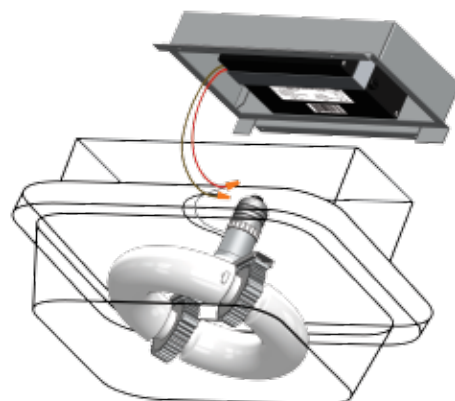


GAS STATION CANOPY CONVERSION KITS

FEATURES

- Includes circular lamp, generator, hardware and installation instructions
- Easy and fast to install
- Thermally tested and fully warranted
- Patent pending components
- UL recognized lamp and generator components

Kit P/N	System Type	Ballast Mounted Inside/On			UL Certified
		Enclosure	Top of Fixture	Surface 2' X 2' Box	
Canopy Kit (with enclosure) - STOCK KITS					
HH ISK C70 CNL S01	Circular 70W	Yes	—	—	Yes
HH ISK C80 CNL S01	Circular 80W	Yes	—	—	Yes
HH ISK C100 CNL S01	Circular 100W	Yes	—	—	Yes
HH ISK C120 CNL S01	Circular 120W	Yes	—	—	Yes
Canopy Kit (with top mounted ballast) - SPECIAL ORDER KITS					
HH ISK C70 CNL S02	Circular 70W	—	Yes	—	—
HH ISK C80 CNL S02	Circular 80W	—	Yes	—	—
HH ISK C100 CNL S02	Circular 100W	—	Yes	—	—
HH ISK C120 CNL S02	Circular 120W	—	Yes	—	—
Canopy 2X2 Kit - SPECIAL ORDER KITS					
HH ISK C70 CNL S03	Circular 70W	—	—	Yes	—
HH ISK C80 CNL S03	Circular 80W	—	—	Yes	—
HH ISK C100 CNL S03	Circular 100W	—	—	Yes	—
HH ISK C120 CNL S03	Circular 120W	—	—	Yes	—



Example fixture after Retrofit Kit installation.

INDUCTION



BILLBOARD CONVERSION KITS

FEATURES

- Includes tubular lamp, generator, hardware and installation instructions
- Easy and fast to install in popular billboard fixture types
- Thermally tested and fully warranted at maximum ambient temperature of 40°C
- Patent pending components
- IES files available
- UL recognized lamp and generator components
- Pending UL listing for entire retrofit kit

Available Kits		
Kit P/N	System Watts	Suited for Retrofit of:
HH ISK 120HP01	120 Watt	Panel-Vue®*
HH ISK 150HP02	150 Watt	Panel-Vue®*
HH ISK 200HP03	200 Watt	AdVue®*
HH ISK 150HP04	150 Watt	AdVue®*



Illustration of a post-installation fixture

*Panel-Vue and AdVue are registered trademarks of Acuity Brands Lighting, Inc.



CUSTOM FIT INDUCTION RETROFIT SYSTEMS

Fulham provides a complete range of supportive services that may enable the customer to retrofit their existing fixtures with HighHorse Induction Lamps & Generators. This unique Fulham retrofit system not only takes advantage of Induction technology, but also provides a cost-effective solution with minimal investment.

HighHorse Induction Retrofit systems services make it easy to retrofit existing fixtures, minimize labor cost of conversion, ensure reliability and maximize the expected life of components.

The Fulham laboratories in Los Angeles, California are staffed with highly skilled engineering talent and the most state-of-the-art testing equipment in the world, including lamp spheres for testing lumen output and efficiency.



Complete Generator & Lamp
Mounting Assembly

BASIC 7-POINT ENGINEERED SYSTEM

- ✓ Generator Mounting and Thermal Management
- ✓ Lamp Mounting and Optical Enhancement
- ✓ Ease of Component Installation
- ✓ Thermal & Conductivity Test Report
- ✓ Component CAD Drawings*
- ✓ Installation Instructions
- ✓ Warranty Evaluation

*Contact Factory for Applicable Charges



Highbay fixture for warehouse application.
400 Watt MH retrofitted to a 200 Watt
Induction lighting system with disc generator.



Cobrahead for street lighting. 100 Watt HPS retrofitted to a
55 Watt Induction lighting system with profile generator.

ENGINEERING SERVICES

SYSTEM EVALUATION

Fulham determines the best lamp and generator combination for the existing fixture; this includes:

- Generator mounting & thermal management
- Lamp mounting and optical enhancement
- Ease of component installation options
- Retrofit component CAD drawings
- Installation instructions
- Evaluation sample

CERTIFICATION SERVICES

UL CERTIFICATION

Fulham takes the responsibility to ensure that the retrofit meets the UL Certification standard and provides the customer with a Multiple Listing for the retrofitted fixture. This ensures the fixtures operate safely and meet UL standards for this type of fixture conversion.

IES PHOTOMETRIC FILES

INDEPENDENT LAB TESTING

During the initial system evaluation Fulham evaluates basic performance; most often this performance level exceeds the existing levels of illumination. Fulham is contracted with an Independent Test Lab and can provide a new IES Photometric file for application specific purposes.

SAMPLE PROGRAM

BETA-SITE TESTING

Fulham provides flexible sample programs to ensure the HighHorse Retrofit System meets all the customer requirements.

To take full advantage of HighHorse Induction Lighting in various applications, Fulham works with the customer to maximize the lighting effect and minimize the energy cost; this may require testing the retrofit fixtures before wholesale conversion.



Decorative pole top fixture for pathway lighting. 70 Watt MH retrofitted to a 35 Watt Induction lighting system with profile generator.

Highbay fixture for warehouse lighting. 400 Watt MH retrofitted to a 200 Watt Induction lighting system with disc generator.



WARRANTY PROGRAM

APPLICATION EVALUATION PROCESS

Fulham is known for high quality products and superior support services. HighHorse Induction Systems are designed for the Lamp and Generator to operate as a system which provide long-life and consistent operation.

Before and during the process of retrofit evaluation, Fulham provides a Warranty Evaluation Summary. This identifies all the critical data necessary to determine life-expectancy.

HighHorse Induction Systems come with a Full Five-Year Warranty, but much longer life is possible with proper thermal management.

GREEN ENERGY SERVICES

REBATE PROGRAMS

Many programs have been or are being offered for converting conventional lighting systems to Induction Lighting technology. Fulham is constantly reviewing these programs and providing our customers with information about these financial offers.

Where rebate programs do not exist, we can assist by providing cost and technical evaluation materials that can assist with implementation of a rebate program.

HighHorse Induction product specification sheets and other related literature online





347V 0-10V DIMMING CONSTANT CURRENT SINGLE OUTPUT



	T1M1 347 0700-28C	T1M1 347 0700-40C
Certifications	cULus, CE	cULus, CE
Input Voltage	347V	347V
Frequency	60Hz	60Hz
Number of Channels	1	1
Output Wattage	28	40
Output Volts	18~40VDC	18~57VDC
Output Current (mA)	700	700
Driver Size (L/W/H)	4.72"/2.69"/1.2" 120mm/68.4mm/30mm	4.72"/2.69"/1.2" 120mm/68.4mm/30mm
Case Material	Metal	Metal
Min. Operating Temp	-20°C	-20°C
Max. Case Temp	90°C	90°C
Dimming Type	0-10V	0-10V
Dimming Range	0-1V=Off; 9-10V= Full Output	0-1V=Off; 9-10V= Full Output
Conforms to IP Rating:	64	64

LED



0-10V DIMMING CONSTANT CURRENT SINGLE OUTPUT



	T1M1 UNV 0700-28BL	T1M1 UNV 0700-40C	T1M1 UNV 1050-42C	T1M1 UNV 1400-60L
Certifications	cULus, CE	cULus, CE	cULus, CE	cULus, CE
Input Voltage	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1	1
Output Wattage	28	42	42	60
Output Volts	12~40VDC	18~58VDC	12~40VDC	18~42VDC
Output Current (mA)	700	700	1050	1400
Driver Size	L 3.15", W 2.99", H 1.02" L 80mm, W 76mm, H 26.0mm	L 4.72", W 2.69", H 1.18" L 120mm, W 68.4mm, H 30mm	L 4.72", W 2.69", H 1.18" L 120mm, W 68.4mm, H 30mm	L 9.49", W 1.70", H 1.20" L 241mm, W 43.2mm, H 30.5mm
Case Material	Metal	Metal	Metal	Metal
Min. Operating Temp	-20°C	-20°C	-20°C	-40°C
Max. Case Temp	90°C	90°C	90°C	60°C
Dimming Type	0-10V	0-10V	0-10V	0-10V
Dimming Range	100% - 10%	100% - 10%	100% - 10%	100% - 10%
Conforms to IP Rating:	64	64	64	64

This model has Studs with
Back Leads



0-10V DIMMING CONSTANT CURRENT MULTIPLE OUTPUTS

FEATURES

- Multiple Outputs for Greater Flexibility
- UL Class 2
- Size Similar to Standard Ballasts



	TCD4 UNV 0300-34 L	TCD4 UNV 0350-39 L	TCD4 UNV 0350-56L
Certifications	cURus	cURus	cURus, CE
Input Voltage	120-277V (UNV)	120-277V (UNV)	120-277V (UNV)
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	4	4	4
Output Wattage	34	39	56
Output Volts	15~27VDC	15~27VDC	15~40VDC
Output Current (mA)	300	350	350
Driver Size	L 9.5", W 1.7", H 1.2" L 241mm, W 43mm, H 30mm	L 9.5", W 1.7", H 1.2" L 241mm, W 43mm, H 30mm	L 9.5", W 1.7", H 1.2" L 241mm, W 43mm, H 30.5mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	0°C	0°C	-20°C
Max. Case Temp	70°C	70°C	90°C
Dimming Type	0-10V	0-10V	0-10V
Dimming Range	0-1V=Off; 9-10V= Full Output	0-1V=Off; 9-10V= Full Output	0-1V=Off; 9-10V= Full Output
Conforms to IP Rating:	-	-	64



	TCD4 UNV 0385-42 L	T1M2 UNV 0600-36L	T1M2 UNV 0700-49L
Certifications	cURus	cURus, CE	cURus
Input Voltage	120-277V (UNV)	120-277V (UNV)	120-277V (UNV)
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	4	2	2
Output Wattage	42	36	49
Output Volts	22~27VDC	23~30VDC	10~35VDC
Output Current (mA)	385	600	700
Driver Size	L 9.5", W 1.7", H 1.2" L 241mm, W 43mm, H 30mm	L 11.9", W 1.5", H 1.2" L 302mm, W 38mm, H 31mm	L 10.28", W 1.57", H 1.2" L 261mm, W 40mm, H 30.5mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	0°C	-20°C	-20°C
Max. Case Temp	70°C	85°C	75°C
Dimming Type	0-10V	0-10V	0-10V
Dimming Range	0-1V=Off; 9-10V= Full Output	0-1V=Off; 9-10V= Full Output	0-1V=Off; 9-10V= Full Output





TRIAC DIMMING CONSTANT CURRENT

FEATURES

- Smooth Dimming from 100% - 10%
- Compatible with Leading Dimmer Brands
- Compact Size
- UL Class 2



	TCD1 120 0350-11 C	TCD1 120 0650-18 C	TCD1 120 0700-9 C
Certifications	cURus	cURus	cURus
Input Voltage	120V	120V	120V
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1
Output Wattage	11	18	9
Output Volts	12~32VDC	12~27VDC	6~13VDC
Output Current (mA)	350	650	700
Driver Size	L 3.2", W 2.8", H 1" L 81mm, W 71mm, H 25mm	L 3.2", W 2.4", H 1" L 81mm, W 61mm, H 25mm	L 3.15", W 1.8", H 1.01" L 80mm, W 46mm, H 25.7mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	-20°C	-20°C	-20°C
Max. Case Temp	87°C	82°C	75°C
Dimming Type	Triac Phase Control Dimmer Switch	Triac Phase Control Dimmer Switch	Triac Phase Control Dimmer Switch
Dimming Range	100% - 25%	100% - 10%	100% - 10%
Conforms to IP Rating:	62	62	62

	T1T1 120 0700-9 C	T1T1 120 0700-18C	T1T1 120 1000-20C
Certifications	cURus, CE	cURus	cURus
Input Voltage	120V	120V	120V
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1
Output Wattage	9	18	20
Output Volts	12.8VDC	17~26VDC	11~20VDC
Output Current (mA)	700	700	1000
Driver Size	L 3.20", W 2.83", H 1.00" L 81.4mm, W 71.9mm, H 25.4mm	L 3.20", W 2.83", H 1" L 81.4mm, W 71.9mm, H 25.4mm	L 4.18", W 2.21", H 1.14" L 106mm, W 56mm, H 29mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	-30°C	-25°C	-20°C
Max. Case Temp	90°C	90°C	86°C
Dimming Type	Triac Phase Control Dimmer Switch	Triac Phase Control Dimmer Switch	Triac Phase Control Dimmer Switch
Dimming Range	100% - 10%	100% - 25%	100% - 10%
Conforms to IP Rating:	62	62	62





CONSTANT CURRENT SINGLE OUTPUT



FEATURES

- Optimized System Efficiency
- High Efficiency
- UL Class 2
- Compact Size

	TC1 120 0350-6C	TC1 120 0350-15C	TC1 120 0700-18C
Certifications	cURus	cURus, CE	cURus
Input Voltage	120V	120V	120V
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1
Output Wattage	6	15	18
Output Volts	3~18VDC	24~45VDC	10~26VDC
Output Current (mA)	350	350	700
Driver Size	L 2.57", W 1.8", H 1" L 65mm, W 45mm, H 25mm	L 2.57", W 1.8", H 1" L 65mm, W 45mm, H 25mm	L 3.2", W 2.4", H 1" L 81mm, W 61mm, H 25mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	-20°C	-20°C	-20°C
Max. Case Temp	70°C	75°C	80°C



	T1 UNV 0700-28C	T1 UNV 0700-40C	T1 UNV 1050-42C
Certifications	cURus, CE	cURus, CE	cURus, CE
Input Voltage	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1
Output Wattage	28	40	42
Output Volts	12~40VDC	18~58VDC	12~40VDC
Output Current (mA)	700	700	1050
Driver Size	L 3.15", W 2.99", H 1.02" L 80mm, W 76mm, H 26mm	L 3.74", W 2.76", H 1.2" L 95mm, W 70mm, H 30mm	L 3.74", W 2.76", H 1.2" L 95mm, W 70mm, H 30mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	-20°C	-20°C	-20°C
Max. Case Temp	90°C	90°C	90°C
Conforms to IP Rating:	64	64	64





CONSTANT CURRENT MULTIPLE OUTPUTS



FEATURES

- Optimized System Efficiency
- Multiple outputs for greater flexibility for LEDs run in Series
- High Efficiency
- UL Class 2
- Compact Size

	TC3 MLT 0350-50L	TC3 120 0500-75 LA	TC3 MLT 0500-80L
Certifications	cURus, CE	cURus	cURus, CE
Input Voltage	120-240V	120V	120-240V
Frequency	50/60Hz	50/60Hz	50/60Hz
Number of Channels	3	3	3
Output Wattage	50 (16.7 Max per Channel)	75 (25 Max per Channel)	80 (26.7 Max per Channel)
Output Volts	18~48VDC	20~50VDC	18~53VDC
Output Current (mA)	350	500	500
Driver Size	L 14.8", W 1.7", H 1" L 376mm, W 43mm, H 25.4mm	L 12", W 1.34", H 1" L 305mm, W 34mm, H 25.4mm	L 18", W 1.7", H 1" L 457mm, W 43mm, H 25.4mm
Case Material	Metal	Metal	Metal
Min. Operating Temp	-30°C	-30°C	-30°C
Max. Case Temp	90°C	75°C	90°C
Conforms to IP Rating:	62	62	62



Fulham has proven capabilities in developing and manufacturing lines of digital addressable drivers (DALI and DMX drivers) as private-label LED controllable items and can work with you to develop products to meet your precise specifications.



**FULHAM IS A MEMBER OF THE
ZHAGA CONSORTIUM.**

Zhaga is a global cooperation with participation by luminaire manufacturers, lamp manufacturers, LED module makers, and companies that supply the lighting industry. The Zhaga Consortium aims to make the LED light sources ("LED light engines") manufactured by different companies interchangeable.

Learn more about The Zhaga Consortium at:
www.zhagastandard.org



CONSTANT VOLTAGE



FEATURES

- High Efficiency
- Reliability & Flexibility
- 12V, 24V & 48V
- Low Temperature Performance

	T1UNV 012V-20 L	T1M1UNV 012V-20 L	T1UNV 012V-60 L	T1 120 012V-60 LE	T1 UNV 012V-60 LF	T1UNV 024V-20 L
cURus, CE and RoHS	✓	✓	✓	✓	✓	✓
Input Voltage	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)	120V	100-277V (UNV)	100-277V (UNV)
Frequency	50/60Hz	50/60Hz	50/60Hz	60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1	1	1	1
Output Wattage	20W	20W	60W	60W	60W	20W
Output Volts	12VDC	12VDC	12VDC	12VDC	12VDC	24VDC
Output Current	max. 1.66A	max. 1.66A	max. 5A	max. 5A	max. 5A	max. 0.833A
Case Size (L/W/H) (Inch)	6.30/1.57/0.98	6.30/1.57/0.98	9.5/1.7/1.2	9.5/1.7/1.22	9.5/1.7/1.22	6.30/1.57/0.98
Case Size (L/W/H) (mm)	160/40/25	160/40/25	241/43/30	241/43/31	241/43/31	160/40/25
Case Material	Metal	Metal	Metal	Metal	Metal	Metal
Min. Operating Temp	-20°C	-20°C	-40°C	-25°C	-25°C	-20°C
Max. Case Temp	90°C	90°C	90°C	90°C	90°C	90°C
Conforms to IP Rating:	62	62	64	64	64	62



	T1M1UNV 024V- 20 L	T1UNV 024V- 60 L	T1UNV 024V-100 LS	T1 UNV 024V- 100 LE	T1UNV 030V- 100 LS	T1UNV 048V- 150 L
cURus	✓	✓	✓	✓	✓	✓
CE and RoHS	✓	✓	✓	✓	✓	✓
Input Voltage	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)	100-277V (UNV)
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Number of Channels	1	1	1	1	1	1
Output Wattage	20W	60W	100W	100W	100W	150W
Output Volts	24VDC	24VDC	24VDC	24VDC	30VDC	48VDC
Output Current	max. 0.833A	max. 2.5A	max. 4.1A	max. 4.17A	max. 3.3A	max. 3.12A
Case Size (L/W/H) (Inch)	6.30/1.57/0.98	9.5/1.7/1.2	10.27/1.59/1.19	9.5/1.7/1.22	10.27/1.59/1.19	8.3/2.6/1.6
Case Size (L/W/H) (mm)	160/40/25	241/43/30	262/43/30	241/43/31	262/43/30	211/66/41
Case Material	Metal	Metal	Metal	Metal	Metal	Metal
Min. Operating Temp	-20°C	-40°C	-40°C	-25°C	-40°C	-40°C
Max. Case Temp	90°C	90°C	89°C	90°C	88°C	80°C
Conforms to IP Rating:	62	66	64	64	64	66





LED LIGHT ENGINES MODULE MODELS

MODULE MODEL NUMBERS:

When ordering modules, replace "xx" with desired correlated color temperature (CCT) option.
27 = 2700K, 30 = 3000K, 35 = 3500K, 40 = 4000K, 50 = 5000K, 65 = 6500K
Example: TM02LN40xx-001 would be TM02LN4027-001 for a system with a CCT of 2700K.

CUSTOMIZATION AVAILABLE

Contact Client Services for details at
order@fulham.com or 323-599-5000

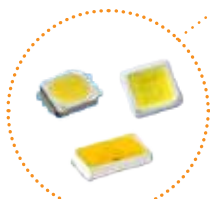
FLEXIBILITY: 1,000+ COMBINATIONS



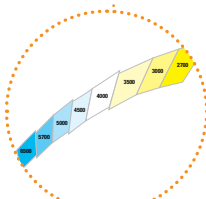
Several Board Designs



Multiple Assembly Options



Various LED packages



Six CCT Choices



Wire Leads and/or Connectors

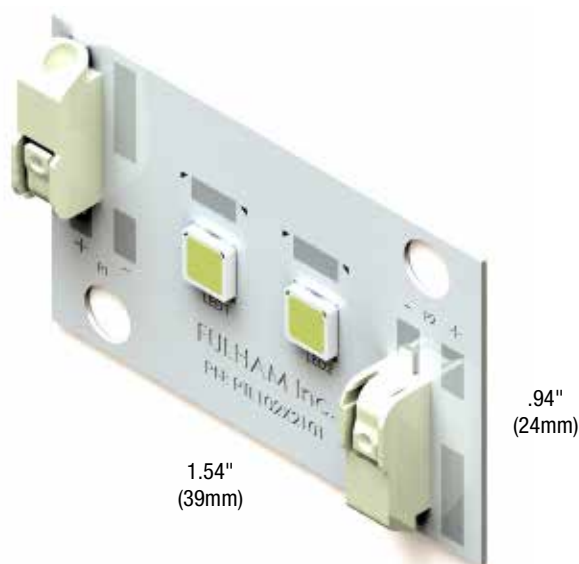
NOTE: See page 50 for HotSpot2 LED Emergency Lighting System options.

TM02 COMPACT LED MODULES

IMAGES NOT SHOWN TO SCALE
RELATIVE TO EACH OTHER



ThoroLED Module	Max Input Current	Forward Voltage	Rated Power	Nominal Lumens (4000K)
TM02LN26XX-001	700 mA	6.6V DC	4.6W	425
TM02LN40XX-001	350 mA	20V DC	7W	550





TM02-TM04 LINEAR LED MODULES

cULus
IMAGES NOT SHOWN TO SCALE
RELATIVE TO EACH OTHER

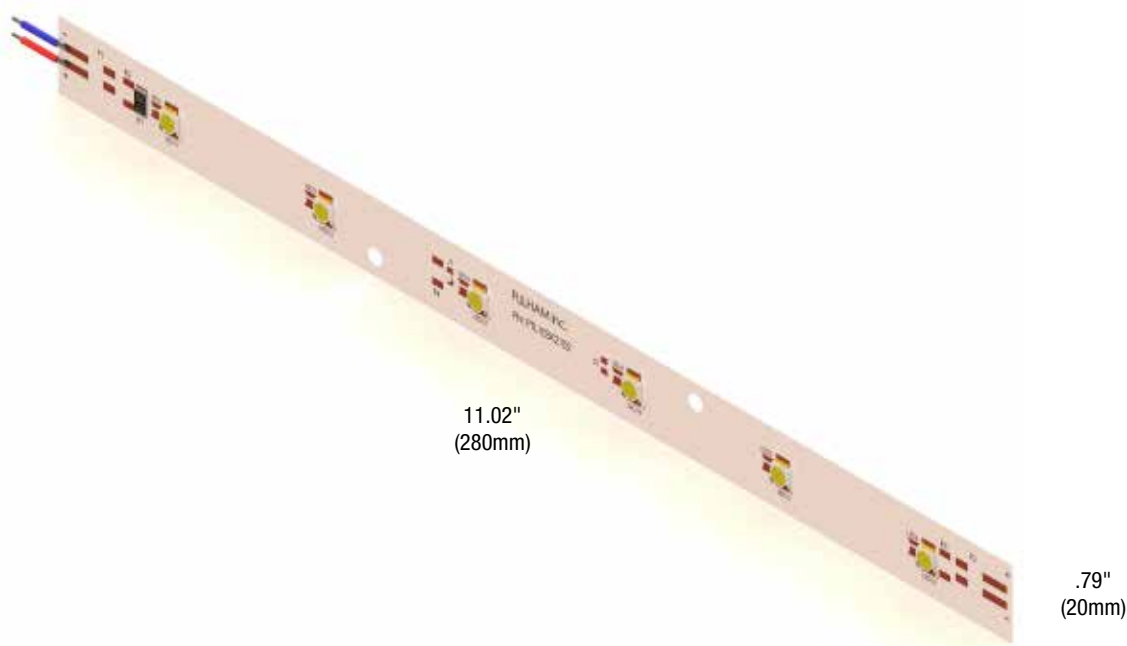
ThoroLED Module	Max Input Current	Forward Voltage	Rated Power	Nominal Lumens (4000K)
TM02LN26xx-002	700 mA	6.6V DC	4.6W	425
TM02LN40xx-002	700 mA	10V DC	7W	550
TM02LN40xx-003	350 mA	20V DC	10.5W	550
TM03LN26xx-001	700 mA	9.9V DC	6.9W	625
TM03LN40xx-001	350 mA	30V DC	10.5W	850
TM04LN26xx-001	700 mA	13.2V DC	9.2W	850
TM04LN40xx-001	350 mA	40V DC	14W	1100
TM04LN40xx-002	700 mA	20V DC	14W	1100



LED

TM06 LINEAR LED MODULES

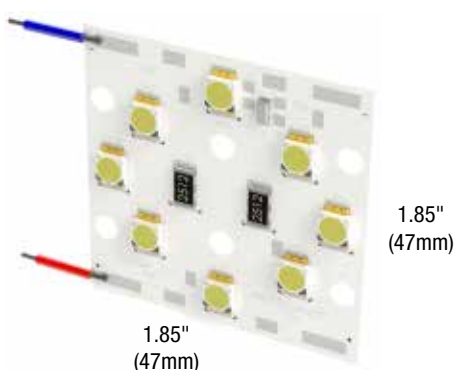
ThoroLED Module	Max Input Current	Forward Voltage	Rated Power	Nominal Lumens (4000K)
TM06LN13XX-001	700 mA	20V DC	14W	1275
TM06LN40XX-001	700 mA	30V DC	21W	1650





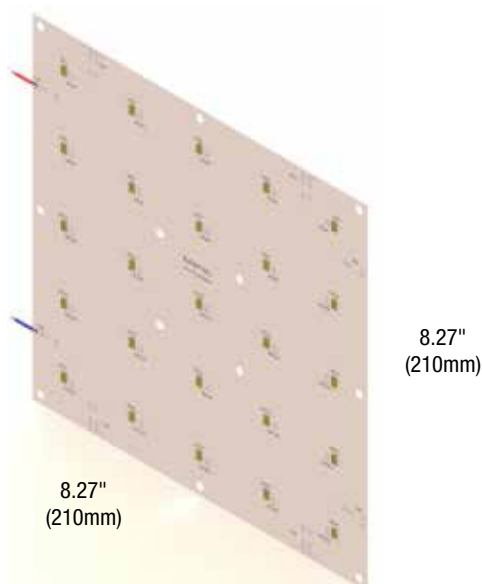
TM04-TM10 SQUARE LED MODULES

ThoroLED Module	Max Input Current	Forward Voltage	Rated Power	Nominal Lumens (4000K)
TM04SQ26xx-001	700 mA	13.2V DC	9.2W	850
TM04SQ40xx-001	350 mA	40V DC	14W	1100
TM04SQ40xx-002	700 mA	20V DC	14W	1100
TM05SQ26xx-001	700 mA	16.5V DC	11.6W	1050
TM05SQ40xx-001	350 mA	50V DC	17W	1400
TM06SQ26xx-001	700 mA	20V DC	14W	1275
TM06SQ40xx-001	700 mA	30V DC	21W	1650
TM07SQ26xx-001	700 mA	23.1V DC	16.2W	1500
TM08SQ26xx-001	700 mA	26.4V DC	18.5W	1700
TM08SQ40xx-001	700 mA	40V DC	28W	2200
TM10SQ26xx-001	700 mA	33V DC	23.1W	2150



TM16/TM25 SQUARE LED MODULES

ThoroLED Module	Max Input Current	Forward Voltage	Rated Power	Nominal Lumens (4000K)
TM16SQ05xx-001	500 mA	13.7V DC	6.8W	600
TM16SQ12xx-001	700 mA	25.4V DC	17.8W	1675
TM25SQ05xx-001	650 mA	17.2V DC	11.1W	950
TM25SQ12xx-001	700 mA	31V DC	21.7W	2150





TM03 LINEAR LED MODULES/ STRING ASSEMBLIES

ThoroLED Module	Max Input Drive	Forward Voltage	Rated Power	Nominal Lumens at 4000K
TM03LN05xx-003	350 mA - CC	3.15V DC	1.1W	100 lumens
TM03LN05xx-001	12V DC - CV	N/A	1.2W	100 lumens

ThoroLED String Assembly	Max Input Drive	Forward Voltage	Rated Power	# Modules per String	C-C	Dimensions	Nominal Lumens (4000K)
TM03LN05xx-D01	350 mA - CC	12.6V DC	4.4W	4	4.7"	15.7" x 0.6"	400
TM03LN05xx-D02	12V DC - CV	N/A	4.8W	4	4.7"	15.7" x 0.6"	400
TM03LN05xx-E01	350 mA - CC	18.9V DC	6.6W	6	4.1"	22.2" x 0.6"	600
TM03LN05xx-E02	12V DC - CV	N/A	7.2W	6	4.1"	22.2" x 0.6"	600
TM03LN05xx-F01	350 mA - CC	31.4V DC	11.0W	10	3.74"	35.2" x 0.6"	1000
TM03LN05xx-F02	12V DC - CV	N/A	12.0W	10	3.74"	35.2" x 0.6"	1000
TM03LN05xx-G01	350 mA - CC	18.9V DC	6.6W	6	2.95"	16.3" x 0.6"	600
TM03LN05xx-G02	12V DC - CV	N/A	7.2W	6	2.95"	16.3" x 0.6"	600



TM24 LINEAR LED MODULES/ STRING ASSEMBLIES

ThoroLED Module	Max Input Current	Forward Voltage	Rated Power	Nominal Lumens (4000K)
TM24LN05xx-002	500 mA	20.4V DC	10.2W	900
TM24LN05xx-003	700 mA	13.4V DC	9.4W	850
TM24LN05xx-004	1050 mA	10.3V DC	10.8W	925
TM24LN05xx-005	350 mA	26.8V DC	9.4W	850

ThoroLED String Assembly	Max Input Current	Forward Voltage	Rated Power	# Modules per String	C-C	Dimensions	Nominal Lumens (4000K)
TM24LN05xx-A01	500 mA	40.8V DC	20.4W	2	22.6"	40.55" x 0.63" (18.11" x 0.63" board size)	1800
TM24LN05xx-B01	700 mA	26.8V DC	18.8W	2	22.6"	40.55" x 0.63" (18.11" x 0.63" board size)	1700
TM24LN05xx-C01	1050 mA	20.6V DC	21.6W	2	22.6"	40.55" x 0.63" (18.11" x 0.63" board size)	1850
TM24LN05xx-D01	350 mA	56.6V DC	18.8W	2	22.6"	40.55" x 0.63" (18.11" x 0.63" board size)	1700

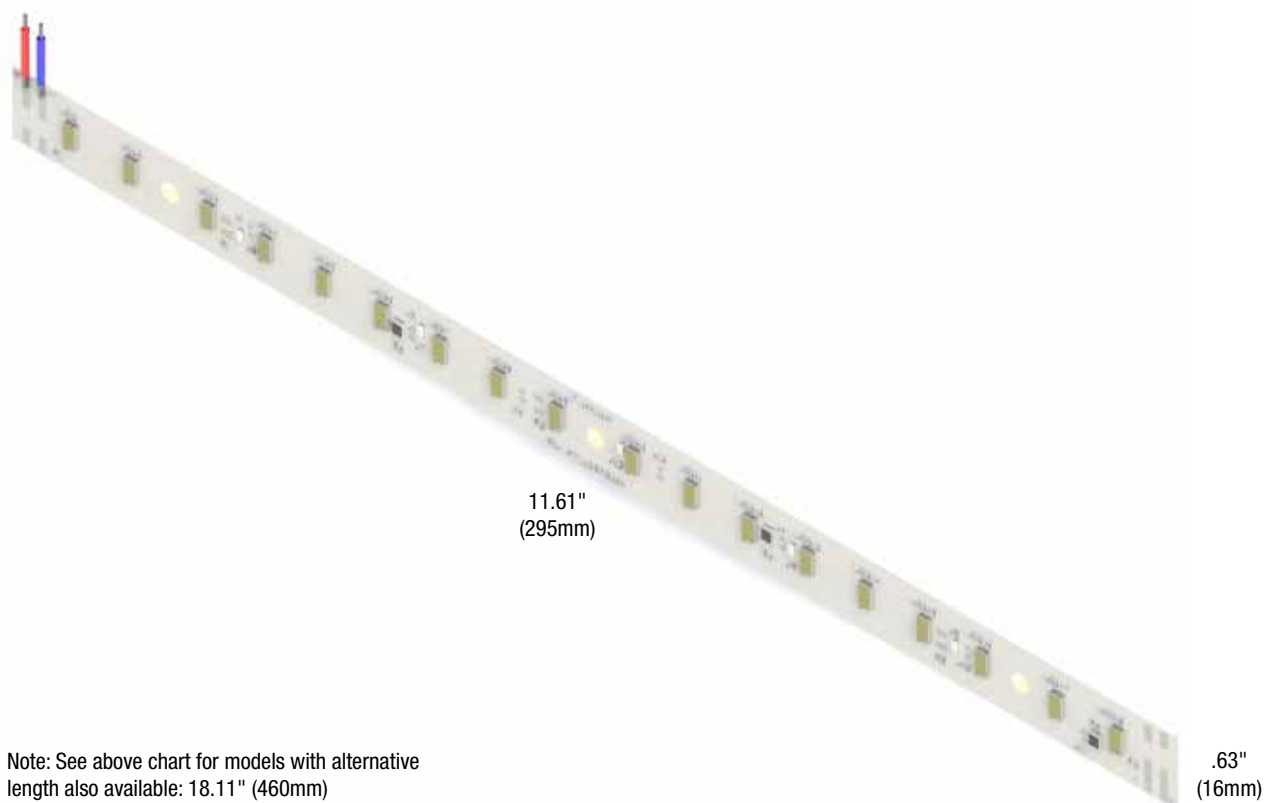




TM18 LINEAR LED MODULES/ STRING ASSEMBLIES

ThoroLED Module	Max Input Drive	Forward Voltage	Rated Power	Dimensions	Nominal Lumens (4000K)
TM18LN05xx-010	700 mA - CC	10.2V DC	7W	11.61" x 0.63"	600
TM18LN05xx-003	700 mA - CC	10.2V DC	7W	18.11" x 0.63"	600
TM18LN05xx-011	350 mA - CC	20.4V DC	7W	11.61" x 0.63"	600
TM18LN05xx-009	350 mA - CC	20.4V DC	7W	18.11" x 0.63"	600
TM18LN05xx-005	12V DC - CV	N/A	7.2W	11.61" x 0.63"	600
TM18LN05xx-002	12V DC - CV	N/A	7.2W	18.11" x 0.63"	600
TM18LN05xx-019	24V DC - CV	N/A	7.2W	11.61" x 0.63"	600
TM18LN05xx-014	24V DC - CV	N/A	7.2W	18.11" x 0.63"	600

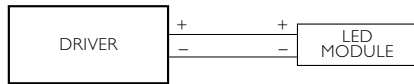
ThoroLED String Assembly	Max Input Drive	Forward Voltage	Rated Power	# Modules per String	C-C	Dimensions	Nominal Lumens (4000K)
TM18LN05xx-G01	12V DC - CV	N/A	28.8W	4	12.0"	48.03" x 0.63" (11.61" x 0.63" board size)	2200
TM18LN05xx-K01	24V DC - CV	N/A	28.8W	4	12.0"	48.03" x 0.63" (11.61" x 0.63" board size)	2200
TM18LN05xx-P01	350 mA - CC	40.8V DC	14.2W	2	12.0"	24.02" x 0.63" (11.61" x 0.63" board size)	1275
TM18LN05xx-R01	700 mA - CC	20.4V DC	14.2W	2	12.0"	24.02" x 0.63" (11.61" x 0.63" board size)	1275



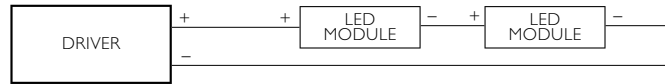
Note: See above chart for models with alternative length also available: 18.11" (460mm)

SINGLE CHANNEL

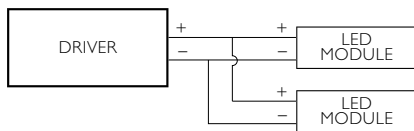
A - Single Channel Driver,
1 LED Module connected



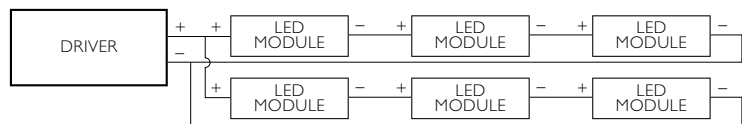
B - Single Channel Driver
LED Modules connected in series



C - Single Channel Driver
LED Modules connected in parallel

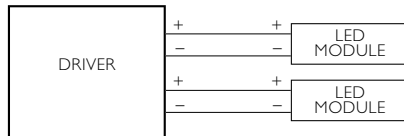


D - Single Channel Driver
LED Modules connected in series & parallel

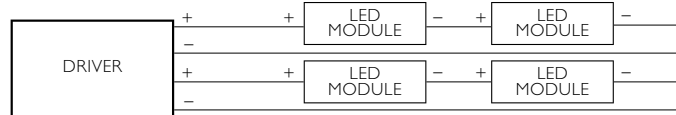


MULTI-CHANNEL

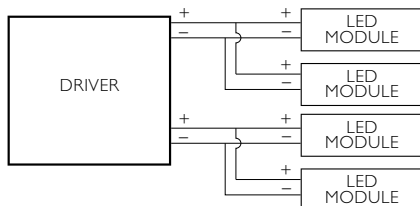
E - Multi-Channel Driver
LED Module/channel connected



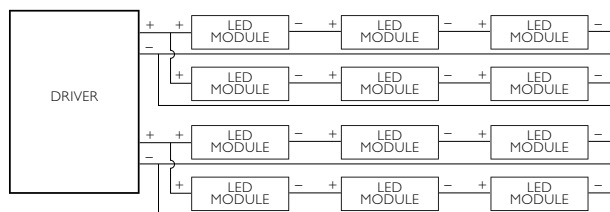
F - Multi-Channel Driver
LED Modules connected in series



G - Multi-Channel Driver
LED Modules connected in parallel



H - Multi-Channel Driver
LED Modules connected in series & parallel





L.E.A.P. LIGHT ENGINE APPLICATION PROGRAM

Fulham offers a comprehensive set of engineering services that can enable OEM customers and other lighting professionals to convert existing fixture styles or new lighting products to take advantage of ThoroLED Light Engines. This unique Fulham program takes full advantage of LED technology and provides a cost efficient solution with a relatively low investment.

The ThoroLED L.E.A.P. makes it easy to:

- 1) Convert existing fixture product lines or installations;
- 2) Design new LED lighting products for optimized performance and cost;
- 3) Minimize time to market for new LED fixture products;
- 4) Ensure reliability and performance of LED modules and LED drivers; and,
- 5) Maximize the expected life of all LED Light Engine components.

Fulham's engineering laboratories in Los Angeles, California are replete with highly skilled staff and an extensive array of testing equipment for successful implementation of LED technology into lighting products and applications.

LED LIGHTING SYSTEMS: ENGINEERED FOR VALUE AND PERFORMANCE

- Thermal and optical optimization for LED Modules and Assemblies
- Thermal management solutions for LED Driver mounting
- Configuration for ease of component installation
- Conversion accessory component CAD drawings
- Complete installation instructions for the LED Light Engine Kit
- Prototype assembly and optimization
- Regulatory and Standards Compliance evaluation



Above: LED Light Engine solution for desk lamp.
Right: Testing thermal performance of LED Light Engine solutions.

ENGINEERING SERVICES

SYSTEM EVALUATION

Fulham determines the best LED Light Engine for the existing OEM fixture, including:

- LED module mounting; thermal and optical optimization
- Driver mounting and thermal management
- Ease of component installation options
- Conversion Component CAD drawings
- Complete installation instructions for the LED Light Engine
- Prototype assembly and optimization

CERTIFICATION SERVICES

UL CERTIFICATION

Fulham's components are designed to meet or exceed UL's new exacting LED Lighting Products safety standard known as UL8750. Similarly, Fulham's products are compliant with international standards such as CE and others. Employment of Fulham's UL Recognized LED drivers and LED modules ensures that customers are able to successfully achieve UL certification for their products.

IES PHOTOMETRIC FILES

INDEPENDENT LAB TESTING

During the initial converted system evaluation, Fulham can provide basic photometric performance and evaluation. Fulham is contracted with a National Recognized Independent Test Lab and can provide a new IES Photometric file for application specific purposes.



LED Light Engine solution for outdoor wall sconce.



LED Light Engine solution for 2' x 2' flat panel commercial light.

SAMPLE PROGRAM

BETA-SITE TESTING

Fulham provides flexible sample programs to ensure the ThoroLED L.E.A.P. systems meet customer requirements. To take full advantage of the ThoroLED L.E.A.P. in various applications, Fulham works with the customer to maximize the lighting effect and minimize the energy cost.

WARRANTY PROGRAM

APPLICATION EVALUATION PROCESS

Fulham is reputed for high quality products and superior support services; ThoroLED Systems are designed for the LED Light Engine to operate as a system that provides long-life and consistent operation.

Before and during the process of conversion evaluation, Fulham offers a Warranty Evaluation Summary that identifies critical data and performance attributes needed to insure the life expectancy of the LED Light Engine is achieved. ThoroLED Systems come with a Five-Year Warranty, while in most cases much longer life is possible due to superior thermal management of the components.

GREEN ENERGY SERVICES

REBATE PROGRAMS

Many government programs are being offered for converting conventional lighting systems to more efficient, new lighting technologies such as LED technology. Fulham is constantly reviewing these programs and adapting its products and solutions to meet these money-saving program requirements. Many of Fulham's LED Light Engines are designed and tested for use in a fixture that will meet all criteria for certification under EPA's Energy Star Program for Luminaires, version 1.0.

ThoroLED product specification sheets and other related literature online





HOTSPOT1 LED EMERGENCY LIGHTING SYSTEM A FULHAM EXCLUSIVE

PATENT PENDING



FireHorse HotSpot1 modular LED systems add inconspicuous emergency lighting capability to existing non-emergency fixtures, such as recessed lighting and wall sconces. A wide choice of lumen output levels, run times, discrete size, universal input voltage, and plug-n-play low voltage output wiring provide extreme adaptability, low cost of installation, and a high level of safety during operation. Ask About our UL Certified Retrofit Kits.



COMPLETE HOTSPOT1 SYSTEM:



Fixture



LED Module



HotSpot1 Driver



HotSpot1 Battery Pack

DOWNLIGHT FIXTURE
IN NORMAL OPERATION

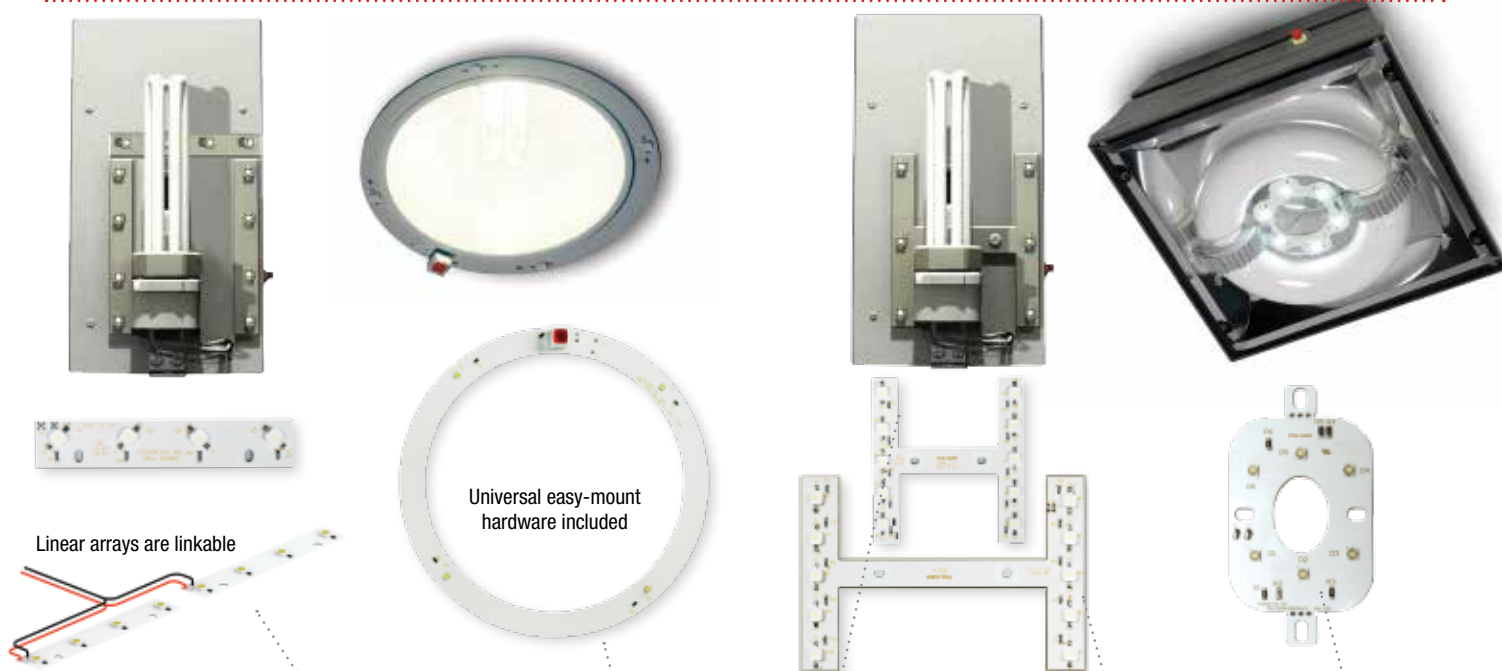


HOTSPOT1 IN OPERATION
DURING POWER OUTAGE



EMERGENCY
EXIT

LED MODULES



	LINEAR	CIRCULAR	H-CONFIG SMALL	H-CONFIG LARGE	CLUSTER
Model No.	FHS1 AR 4W L	FHS2 AR 4W C	FHS3 AR 10W SH FHS3 AR 6W SH	FHS4 AR 10W LH FHS4 AR 8W LH	FHS5 AR 6W CL
Wattage	4W	4W	10W 6W	10W 8W	6W
Applications	Wall Sconce Ceiling Flush Mount Low Level Lighting	Recessed Down Lighting Wall Sconce Cylinder	Wall Sconce Ceiling Flush Mount		Circular Lamp Applications, e.g. Parking Lot Fixtures

HOTSPOT1 DRIVER



Model	FHS1-UNV-3.6L	Input Wattage	4W
Compatible Batteries	NiCd, 3.6 VDC	Surge Protection	C62.41 (TVS)
Battery Capacities	3AH, 4AH, 7AH	Over Current Protection	Fuse
Total LED power	10W	Recharge Time	24 Hrs - 48 Hrs
Illumination time	90 - 360 Min.	LED Connection	Parallel
Input Voltage	100-277VAC (UNV)	LED Output Protection	Self Resetting PTC
Input Frequency	50/60Hz	Output Classification	UL1310/Class 2
Input Current	0.07 A		

HOTSPOT1 BATTERY PACKS (NiCd, 3.6 VDC)



FHSBATT3-C3



FHSBATT3-D4



FHSBATT3-F7

Battery Qty/Type	3 C	3 D	3 F
Operation Duration	3 Amp Hours	4 Amp Hours	7 Amp Hours
Output Power/Time	4W:145min, 6W:90min	4W:200min, 6W:125min, 8W:90min	4W:360min, 6W:235min, 8W:175min, 10W:135min
Case Size	1"H, 2"W, 3.1"L	1.35"H, 2.5"W, 4"L	1.35"H, 3.6"W, 4"L



HOTSPOT2 LED EMERGENCY LIGHTING SYSTEM A FULHAM EXCLUSIVE

FireHorse HotSpot2 is a UL924 recognized emergency lighting system useable with LED modules driven by a constant current source. The battery charger automatically adjusts to the battery size and use. With the proper connector, the driver provides output current based on the harness connected, allowing a wide choice of lumen output and run times.



LED Fixture



HotSpot2 Driver



HotSpot2 Battery Pack

EMERGENCY
EXIT

LED FIXTURE IN NORMAL OPERATION



HOTSPOT2 IN OPERATION DURING POWER OUTAGE

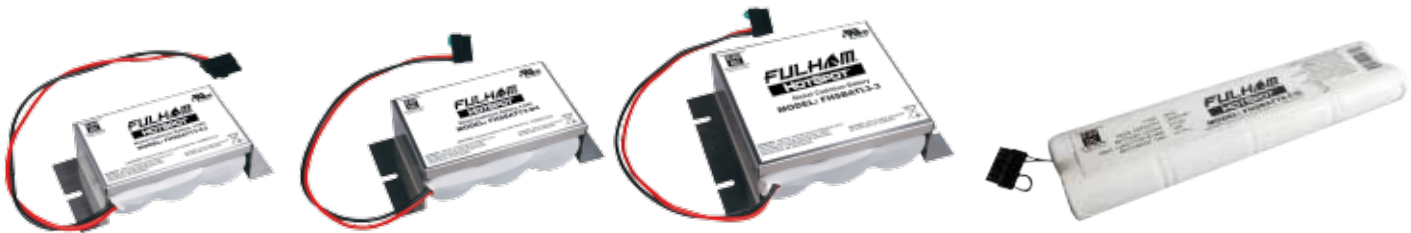
NOTE: May operate all modules at either full or partial power.

HOTSPOT2 DRIVER



Model	FHS2-UNV-36L	Input Current	0.07 A
Compatible Batteries	LiFePo4, NiCd, 9.6 VDC	Input Wattage	<4W
Battery Capacities	.9Ah, 1Ah, 1.2Ah, 1.5Ah, 1.8Ah, 3Ah, 4Ah, 6Ah	No Load Power Loss	0.5W
LED Types	1W or 2W	Surge Protection	C62.41 (MOV)
LED Currents	100mA - 700mA	Over Current Protection	Fuse
Total LED power	20W	Recharge Time	24 Hrs - 48 Hrs
Illumination time	90 - 350 Minutes	LED Connection	Series
Input Voltage	100-277VAC (UNV) ±10%	LED Output Protection	Self Resetting PTC
Input Frequency	50/60Hz	Output Classification	UL1310/Class 2
Output Working Voltage	11-36 VDC	Throughput Maximum	Red Lead: 3A, 60V Max. White/Black Lead: 100W Max.
Ambient Temp.	0°C-50°C NiCd/ 10°C-50°C LiFePo4		

HOTSPOT2 BATTERY PACKS (LiFePo4, NiCd, 9.6 VDC)



Model #	Dimensions (L x W x H)	Chemistry	Capacity	Battery Count	Max Load for 90 min.	Recharge Time
FHSBATT8-AA.9	5.23" x 2.39" x 0.66"	NiCd	900mAh	8 Cells	4W	24Hrs
FHSBATT8-C3	4.15" x 3.29" x 2.11"	NiCd	3000mAh	8 Cells	16W	32Hrs
FHSBATT8-C3L**	7.89" x 2.06" x 1.04"	NiCd	3000mAh	8 Cells	16W	32Hrs
FHSBATT8-D4	4.95" x 3.84" x 2.66"	NiCd	4000mAh	8 Cells	20W	32Hrs
FHSBATL3-1	3.48" x 2.29" x 0.91"	LiFePo4	1000mAh	3 Cells	4W	24Hrs
FHSBATL3-1.5	3.48" x 2.70" x 0.91"	LiFePo4	1500mAh	3 Cells	8W	24Hrs
FHSBATL3-3	4.39" x 2.76" x 1.22"	LiFePo4	3000mAh	3 Cells	16W	32Hrs
FHSBATL6-.6	5.23" x 1.88" x 0.88"	LiFePo4	1200mAh	6 Cells	6W	24Hrs
FHSBATL6-1.5	5.70" x 2.70" x 0.91"	LiFePo4	3000mAh	6 Cells	16W	32Hrs
FHSBATL6-1.5L**	7.89" x 1.50" x 1.19"	LiFePo4	3000mAh	6 Cells	16W	32Hrs
FHSBATL6-3	7.52" x 2.76" x 1.22"	LiFePo4	6000mAh	6 Cells	20W	48Hrs
FHSBATL6-3L**	7.94" x 2.09" x 1.19"	LiFePo4	6000mAh	6 Cells	20W	48Hrs
FHSBATL9-.6	7.52" x 1.88" x 0.88"	LiFePo4	1800mAh	9 Cells	10W	24Hrs

**NOTE: L denotes new linear profile to fit inside of a greater number of fixtures

NOTE: See page 60 for additional LED Light Engine solutions for use with HotSpot2 LED Emergency Lighting Systems.



UNIVERSAL VOLTAGE EMERGENCY FLUORESCENT BALLASTS SPECIFIER GRADE

FEATURES

- Universal voltage (120-277V, 50/60Hz)
- Designed for use with standard and TCLP "green" lamps
- Lamps operated on AC during emergency operation
- Wide range of lumen output
- Wide range of lamp & ballast compatability
- Low profile models available
- Integrated LED Power Indicator/ Test Switch
- Complies with minimum light output requirements per UL924, supplement "SH"
- Factory or field installation
- Full 5-year warranty
- UL listed for damp locations
- Vandal-resistant, sealed, painted steel case type



COMMON SPECIFICATIONS

Operating Voltage	Universal 120V - 277V	Ballast Compatibility	Electronic / Energy Saving
Frequency	50/60Hz	Special Ballast Compatibility	Electronic Dimming Type / End-of-Life
Listing	Emergency	Lamp Compatibility	Fluorescent Type / TCLP
Alternate Listing	Inverter / Charger Pack	Fixture Wiring	Switched Or Unswitched
Regulatory Approval	cULus	Installation	Factory Or Field
Regulatory Compliance	Meets Or Exceeds N.E.C./LSC	Battery Type	High Temp. Long Life Rechargeable NiCd
Location Rating	Damp	Minimum Emergency Operation	90 Minutes
Operating Temp Range	0°C - 55°C	Min. Required Charging Time	24 Hours
Operating Temp Range FH7	20°C - 55°C	Case Construction	Vandal Resistant Painted Steel
Test Switch	LED Push Button		
Indicator Type	LED Type		

EMERGENCY
EXIT

	FH7-UNV-500L	FH11-UNV-750L	FH12-UNV-1400L
Initial Lumen Output	500	750	1400
EOL Time Delay	Yes	Yes	Yes
AC Input	3W	3W	4W
Output Type	AC	AC	AC
Charging Current at 120VAC	50mA Max.	50mA Max.	60mA Max.
Charging Current at 277VAC	30mA Max.	30mA Max.	40mA Max.
Battery Voltage	6.0Vdc	3.6Vdc	12.0Vdc
Battery Rating	12.0Wh	14.4Wh	24.0Wh
Minimum Illumination Time	90 minutes	90 minutes	90 minutes
Recharge Time	24 hrs	24 hrs	24 hrs
Warranty	5 Years	5 Years	5 Years
Ballast Size	H 1.13" W 2.16" L 9.60"	H 1.53" W 2.33" L 9.37"	H 1.23" W 2.17" L 14.58"
Ballast Weight	1.7 lbs.	2.0 lbs.	1.7 lbs.

	FH7-UNV-500L	FH11-UNV-750L	FH12-UNV-1400L
LUMEN OUTPUT	500	750	1400
FT			
FT18W			2
FT24/27W	1	1	1 or 2
FT36/39W	1	1 or 2	1 or 2
§FT40W	1	1	1
FT50W, FT55W		1	1
FQL - 4 PIN			
FQL28W		1	
CFQ - 4 PIN			
CFQ13W			1 or 2
CFQ18W, CFQ26W	1	1	1 or 2
CFTR - 4 PIN			
CFTR13W			1 or 2
CFTR18W, CFTR26W, CFTR32W	1	1	1 or 2
§CFTR42W	1		1
CFM - 4 PIN			
CFM57W			1
CFM70W			1
Circular - FCRT5			
22CRT5		1	1
§40CRT5	1	1	1
55CRT5		1	1
Circular - FCRT9			
32WCRT9			1
§40WCRT9	1	1	1
2D - 4 PIN			
2D21W	1		
2D28W, §2D38W	1	1	1 or 2
T5 - Standard			
F14T5	1	1	1 or 2
F21T5, §F28T5	1	1	1
F35T5		1	1
T5HO - High Output			
F24T5HO, §F39T5HO	1	1	1 or 2
§F49T5HO, §F54T5HO	1	1	1
T8 - Standard			
F17T8		2	1 or 2
F24T8		1	
F25T8	1	1	1 or 2
F28T8		1	
FB024T8			1
F030T8		1	
FB031T8			1
F32T8	1	1	1 or 2
F32T8 ES (25W/28W/30W)	1	1	1
§F40T8	1	1	1
F58T8, F70T8, F96T8		1	1
T8HO - High Output			
F60T8HO			1
F72T8HO		1	1
T8VHO - Very High Output			
F48T10VHO		1	1
T10 / T12 - Standard			
F20T12			2
F30T12			1 or 2
F40T12, F60T12, F72T12, F96T12		1	1
T12HO - High Output			
F36T12HO		1	
F48T12HO, F60T12HO, F72T12HO		1	1
F84T12HO, F96T12HO			1



COMBINATION AC ELECTRONIC & EMERGENCY BALLAST

FEATURES

- Inventory reduction benefits and installation cost-savings based on combination AC/Emergency Ballast design
- Multiple-region certifications for versatility (UL, cULus, CE)
- Reduces wiring assembly time through use of push-in connectors instead of leads
- Modular battery allows easy replacement in the field and continued use of AC/Emergency module
- Pre-connected battery eliminates need for contractor to connect external battery in the field
- Battery low voltage cutoff
- Recommended applications include staircases, ocean liners and more



PUSH-IN CONNECTORS



COMMON SPECIFICATIONS

Model	FHR1-UNV-218T8-L
Operating Voltage	120V - 277V (UNV)
Frequency	50/60Hz
Power Factor	.95
Regulatory Approval	UL, cULus, CE
ATHD	<20%
Charging Current	110mA
Battery Voltage	6V
Battery Capacity	2.0Ah
Battery Type	High Temperature NiCad
Emergency Mode	Minimum 90 Minutes Run Time

LAMP OPERATION

Model Number	# of Lamps	Lamp Type / Designation
FHR1-UNV-218T8-L	1 or 2	F17T8 (U.S.), F18T8 (Europe)



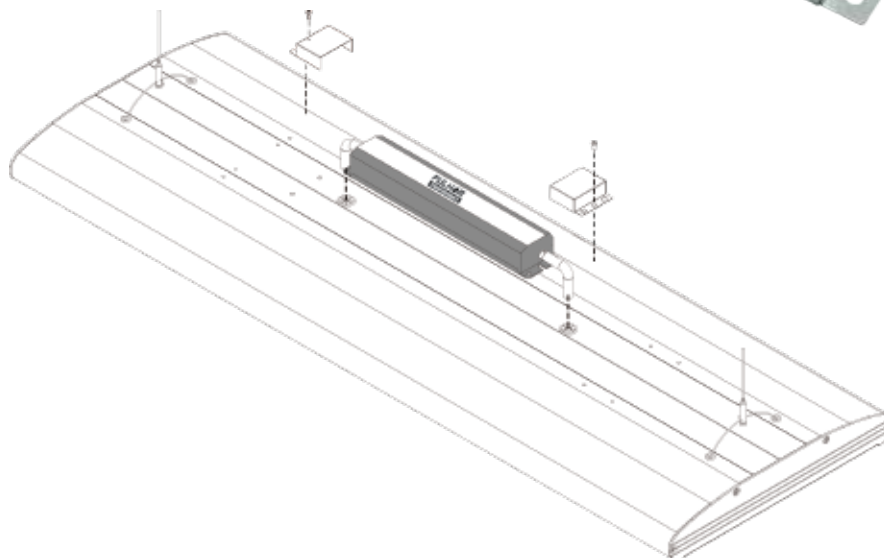
WIRING COVER KIT: ACCESSORY FHCW1

The Fulham® FireHorse® wiring cover kit (Part# FHCW1) is used to enclose wiring when externally top mounting a FireHorse3 **FH3-DUAL-450L**, FireHorse4 **FH4-DUAL-700L**, or FireHorse5 **FH5-DUAL-1400L** fluorescent emergency ballast. This comes in handy, for instance, when there is either no space for the emergency ballast within a fixture or when it is easier and quicker to mount the ballast on top of the fixture.



FEATURES

- Galvanized Steel
- Includes two 5/8" wire way mounting bushings and two # 8 x 1/2" slotted sheet metal screws
- For use with FireHorse3, FireHorse4, or FireHorse5 models





FREELITE™
EMERGENCY EXIT PRODUCTS

PHOTOLUMINESCENT EXIT SIGNS (GLOW-IN-THE-DARK)



FEATURES

- LEED points qualified
- Manufactured in the United States
- Reduces emergency generator loads
- Architectural and aesthetically pleasing designs
- Meets low location egress requirements
- Flexibility of design
- No energy cost – Uses no electricity
- Stores and re-emits ambient light - minimum 5 footcandles required.
- No maintenance cost
- No disposal cost
- Reduces overhead costs
- Non-radioactive (Tritium free)
- Recyclable
- Lower labor and material cost
- No conduit or wire to run
- No emergency circuit required
- Standard bracket options for easy mounting



FLPL50



FLPL51

NOTE: SHOWN WITH FRAME



FLPL75

NOTE: SHOWN WITH FRAME



FLPL10

50' Viewing Distance with PL Legend

SERIES	# of Faces	BACKGROUND COLOR	FRAME COLOR
FLPL50*	S = SINGLE D = DUAL	G = GREEN R = RED B = BLACK SR = BRUSHED ALUMINUM W/ RED LETTER OUTLINE SG = BRUSHED ALUMINUM W/ GREEN LETTER OUTLINE	BLANK = NO FRAME B = BLACK G = GREEN R = RED S = SILVER POWDER COAT W = WHITE



50' Viewing Distance, Vandal Resistant with PL Legend

SERIES	# of Faces	BACKGROUND COLOR	FRAME COLOR
FLPL51*	S = SINGLE D = DUAL	G = GREEN R = RED B = BLACK	B = BLACK G = GREEN R = RED S = SILVER POWDER COAT W = WHITE



75' Viewing Distance with Photoluminescent Background

SERIES	# of Faces	LETTER COLOR	FRAME COLOR
FLPL75*	S = SINGLE D = DUAL	G = GREEN R = RED	BLANK = NO FRAME B = BLACK G = GREEN R = RED S = SILVER POWDER COAT W = WHITE



100' Viewing Distance with PL Legend

SERIES	# of Faces	BACKGROUND COLOR	FRAME COLOR
FLPL10*	S = SINGLE D = DUAL	G = GREEN R = RED W = WHITE B = BLACK	BLANK = NO FRAME B = BLACK G = GREEN R = RED S = SILVER POWDER COAT W = WHITE



MOUNTING BRACKETS FOR USE WITH FRAMED SIGNS

MODEL

COLOR

FLPLMB* For FLPL50 and FLPL75 signs
FLPLMB10* For FLPL10 signs only

B – Black
S – Silver
G – Green

R – Red
W – White



**Options available for quick ship are bolded.*



LOW FREQUENCY ELECTRONIC HID MH BALLASTS



FEATURES

- Short Circuit Operation Protection
- Open Circuit Operation Protection
- Ignitor Failure Protection
- Thermal Protection (UNV only)
- Energy-Efficient Compared to Magnetic
- Extended Lamp Life
- Less Color Shift Over Time
- Type 1 Outdoor Listed
- Low Noise
- Compact Ballast Profiles
- Superior Lumen Maintenance
- Faster Strike and Restrike Times
- Side and Back Lead Options Available
- Light Weight

Frequency	140-220Hz
CCF	<1.5
Min Starting Temp	-30°C/-20°F
Max Case Temp	85°C
EMI/RFI	FCC PART18 CLASS A, NON-CONSUMER

Short Circuit Operation Protection	Yes
Open Circuit Operation Protection	Yes
Ignitor Failure Protection	Yes
End of Lamp Life Protection	Yes

MODELS	DESCRIPTION	ANSI CODES	CASE SIZE (mm) LxWxH	CASE SIZE (inches) LxWxH
H1-120-22HSC	22 W, 120V MH Side Leads	M156, C156, C175, M175	89 x 75 x 30.5	3.50 x 2.95 x 1.20
H3-120-39HSC	39 W, 120V MH Side Leads	M130, C179, C130	89 x 75 x 30.5	3.50 x 2.95 x 1.20
H3-UNV-39HBC	39 W, UNV MH Back Leads	M130, C179, C130	123 x 91.5 x 38	4.84 x 3.60 x 1.50
H3-UNV-39HSC	39 W, UNV MH Side Leads	M130, C179, C130	123 x 91.5 x 38	4.84 x 3.60 x 1.50
H4-120-50HSC	50 W, 120V MH Side Leads	M110, M148	89 x 75 x 30.5	3.50 x 2.95 x 1.20
H5-UNV-70HBC	70 W, UNV MH Back Leads	M98, M139, C139, M143	123 x 91.5 x 38	4.84 x 3.60 x 1.50
H5-UNV-70HSC	70 W, UNV MH Side Leads	M98, M139, C139, M143	123 x 91.5 x 38	4.84 x 3.60 x 1.50
H6-UNV-100HBC	100 W, UNV MH Back Leads	M90, M140	123 x 91.5 x 38	4.84 x 3.60 x 1.50
H6-UNV-100HSC	100 W, UNV MH Side Leads	M90, M140	123 x 91.5 x 38	4.84 x 3.60 x 1.50
H7-UNV-150HBC	150 W, UNV MH Back Leads ☺	M102, M142, C142, M81, M107	155 x 91.5 x 38	6.10 x 3.60 x 1.50
H7-UNV-150HSC	150 W, UNV MH Side Leads ☺	M102, M142, C142, M81, M107	155 x 91.5 x 38	6.10 x 3.60 x 1.50
H8-UNV-175HBC	175 W, UNV MH Back Leads ☺	M57, M152, M137	155 x 91.5 x 38	6.10 x 3.60 x 1.50
H8-UNV-175HSC	175 W, UNV MH Side Leads ☺	M57, M152, M137	155 x 91.5 x 38	6.10 x 3.60 x 1.50

Back Lead Option has 8/32 studs on bottom, 2" on center.

NON-STOCKING ITEMS FOR OEM & PRIVATE LABEL APPLICATIONS

CONTACT US WITH YOUR SPECIFIC NEEDS BASED UPON THESE OPTIONS BELOW:

ORDER@FULHAM.COM - 323-599-5000



INDUSTRIAL ELECTRONIC MH & HPS HID BALLASTS



FEATURES

- 200W-450W MH & HPS Models
- Aluminum Case Construction
- Multi-Voltage Options
- 208 / 240 / 277 / 208V-240V / 240V-277V / 208V-277V
- Non-Dimming Options
- 0-10V Dimming Options
- Auto-Dimming Options
- Manual Dimming Options
- UL - cULus Type Outdoor 1



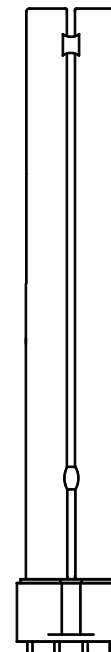
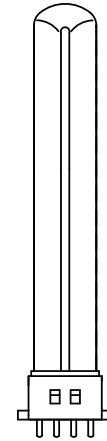
Refer to pages 32-35 for specifications on WorkHorse, WHAM & LongHorse Ballasts

LAMPS	WORKHORSE								WHAM								LONGHORSE			
	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WM 1	WM 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6		
TWIN																				
1 X 5W	3	2				2					15	2	3	2		2				
2 X 5W			1			1		9						1		1		9		
3 X 5W								8										8		
4 X 5W					7			7									7	7		
1 X 7W	3	2									15	2	3	2						
2 X 7W		1				1		9				1		1		1		9		
3 X 7W								8										8		
4 X 7W								7										7		
1 X 9W	3	2									15	2	3	2						
2 X 9W		1				1						1		1		1				
3 X 9W								8										8		
4 X 9W								7										7		
1 X 11W	3										15	2	3							
2 X 11W		1				1						1		1		1				
3 X 11W								8										8		
4 X 11W								7										7		
1 X 13W		3	2	2		2		14				3		3	2	2		14		
2 X 13W			1	1	9			11							1		9	11		
3 X 13W					8		8										8			
4 X 13W					7		7										7			
1 X 18W		3	2	2	14	2		14				3		3	2	2		14		
2 X 18W			1	1	9			9							1		9	9		
3 X 18W					8		8										8			
4 X 18W							7										7			
1 X 24W		3	2	2	14	3		14				3		3	2	3	14	14		
2 X 24W				1	9		9	11							1		9	11		
3 X 24W							8										8			
1 X 27W		3	2	2	14	3		14				3		3	2	3	14	14		
2 X 27W					9		9	11									9	11		
1 X 28W PA				3	14			10							3		14	10		
2 X 28W PA					11												11			
1 X 36/39W			2	2	14	3		10							2	3	14	10		
2 X 36/39W							9	11		22							9	11		
3 X 36/39W									8	25										
4 X 36/39W									7	27										
5 X 36/39W										28										
6 X 36/39W										29										
1 X 40W				2	14	2		14							2	2		14		
2 X 40W							9	11									9	11		
3 X 40W							8		8	25							8			
4 X 40W									7	27										
5 X 40W										28										
1 X 50W				3	14	3	14	10							3	3	14	10		
2 X 50W							11	11		22							11	11		
3 X 50W									8	25										
4 X 50W									7	27										
1 X 55W				3	10		10	12		16					3		10	12		
2 X 55W							11		9								11			
3 X 55W									8	26										
1 X 55WPA					10			13									12	13		

1. Find your lamp type.
2. Find the quantity and wattage of lamps.
3. Look across and find the ballast you need.
4. The indicated number represents wiring diagram needed.
5. Fulham reserves the right to alter these compatibility charts without notice; please refer to www.fulham.com for latest information.

4 PIN ONLY

TWIN

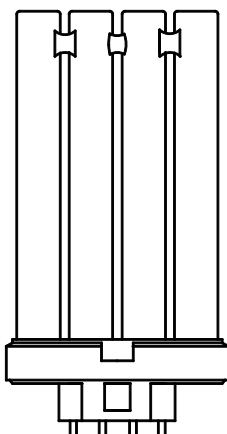


NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes T6 and higher.

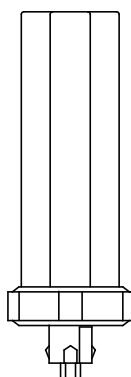
FLUORESCENT

4 PIN ONLY

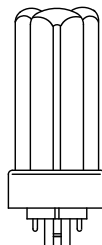
FLAT QUAD



QUAD



TRIPLE



FLUORESCENT

NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes To and higher.



LAMPS	WORKHORSE										WHAM		LONGHORSE					
	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WM 1	WM 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6
2 X 55WPA										23								
3 X 55WPA										26								
1 X 96W										17							12	
2 X 96W										24								
FLAT QUAD																		
1 X 18W		3	2	2	14	3		14			3		3	2	3	14	14	
2 X 18W					9		9	11								9	11	
3 X 18W							8									8		
1 X 24W		3	2	2	14	3		14			3		3	2	3		14	
2 X 24W				1	9		9	11						1		9	11	
3 X 24W							8									8		
1 X 28W PA				3	10										3	10	13	
1 X 36W				2	14	3	14	10							2	3	14	10
2 X 36W					9		9	11								9	11	
3 X 36W										25								
1 X 55W PA					10			13									12	13
1 X 96W PA																	12	
QUAD																		
1 X 10W	3					2					15	2	3	2		2		
2 X 10W						1		9						1		1		9
3 X 10W								8										8
4 X 10W					7			7										7
1 X 13W	3	2									15	2	3	2				
2 X 13W		1				1						1		1		1		
3 X 13W								8										8
4 X 13W								7										7
1 X 18W	3	2				2					15	2	3	2		2		
2 X 18W				1		1		9							1	1		9
3 X 18W					8		8	8									8	8
4 X 18W							7										7	
1 X 26W		3	2	2	14	3		14			3		3	2	3		14	
2 X 26W					9		9	11							1		9	11
3 X 26W							8										8	
4 X 26W							7										7	
1 X 27W PA					10			13									10	13
TRIPLE																		
1 X 13W	3	2									15	2	3	2				
2 X 13W		1				1						1		1		1		
3 X 13W								8										8
4 X 13W								7										7
1 X 18W	3	2				2					15	2	3	2		2		
2 X 18W				1				9							1			9
3 X 18W					8			8										8
4 X 18W							7										7	
1 X 26W		3	2	2	14	3		14			3		3	2	3		14	
2 X 26W					9		9	11									9	11
3 X 26W							8										8	
4 X 26W							7										7	
1 X 32W		3	2	2	14	3		14					3	2	3	14	14	
2 X 32W				1	9		9	11								9	11	
3 X 32W							8										8	

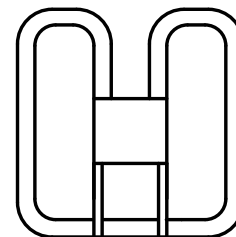
Refer to pages 32-35 for specifications on WorkHorse, WHAM & LongHorse Ballasts

LAMPS	WORKHORSE								WHAM								LONGHORSE					
	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WM 1	WM 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6				
2-D																						
1 X 10W	3	2									15	2	3	2								
2 X 10W		1				1		9				1		1		1		9				
3x10W								8										8				
T9 CIRCLINE																						
1 X 20W		3	2	2	14	3		14				3		3	2	3	14	14				
2 X 20W					9		9	11									9	11				
4 X 20W									7													
1 X 22W		3	2	2	14	3		14				3		3	2	3	14	14				
2 X 22W					9		9	11									9	11				
4 X 22W									7													
1 X 32W			3	3	14			10							3		14	10				
2 X 32W					11		9										11					
3 X 32W									8													
4 X 32W									7													
1 X 40W				2	14	3	14	10							2	3	14	10				
2 X 40W							9	11									9	11				
3 X 40W									8													
4 X 40W									7													
1 X 22+32W				1			9	11							1		9	11				
1 X 32+40W							11										11					
T6 UV (LINEAR)																						
1 X 38W							12															
1 X 50W							12															
1 X 55W							12															
1 X 90W									10													
1 X 120W									10													
1 X 150W									10													
T6 SLIMLINE																						
1 X F42	3	2				2							3	2		2						
2 X F42				1		1		9							1	1		9				
3 X F42								8										8				
4 X F42								7										7				
1 X F64						2										2						
2 X F64						1		9								1		9				
3 X F64								8										8				
T8 LINEAR																						
1 X F13		3	2	2	14	3		14				3		3	2	3		14				
2 X F13				1	9			11							1		9	11				
3 X F13					8		8										8					
4 X F13							7		7	27												
5 X F13										28												
6 X F13										29												
1 X F14		3	2	2	14	3		14				3		3	2	3	14	14				
2 X F14					9			11									9	11				
3 X F14							8			25							8					
4 X F14							7		7	27												
5 X F14										28												
6 X F14										29												
1 X F15		3	2	2		3		14				3		3	2	3		14				
2 X F15			1	1	9			11							1		9	11				

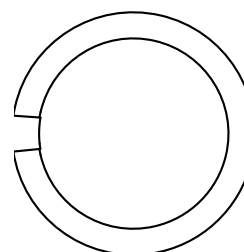
1. Find your lamp type.
2. Find the quantity and wattage of lamps.
3. Look across and find the ballast you need.
4. The indicated number represents wiring diagram needed.
5. Fulham reserves the right to alter these compatibility charts without notice; please refer to www.fulham.com for latest information.

4 PIN ONLY

2-D



T9 CIRCLINE



T6 SLIMLINE



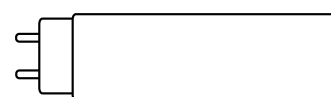
3/4" DIAMETER

T6 UV LINEAR



3/4" DIAMETER

T8 LINEAR



1" DIAMETER



NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes T6 and higher.

FLUORESCENT

LAMPS

WORKHORSE

WHAM

LONGHORSE

	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WHM 1	WHM 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6
3 X F15					8		8										8	
4 X F15					7		7										7	
5 X F15										28								
6 X F15										29								
1 X F17		3		2		2					3		3	2	2			
2 X F17			1	1				9						1				9
3 X F17					8		8										8	
4 X F17					7		7										7	
6 X F17										29								
1 X F18		3	2	2	14	3		14			3		3	2	3			14
2 X F18					9		9	11									9	11
3 X F18							8			25							8	
4 X F18							7			27								
5 X F18										28								
6 X F18										29								
1 X F25		3		2		2					3		3	2	2			
2 X F25				1				9						1				9
3 X F25							8										8	
4 X F25							7										7	
6 X F25										29								
1 X F30		3	2	2	14	3		14					3	2	3			14
2 X F30					9		9	11									9	11
3 X F30							8			25							8	
4 X F30							7		7	27								
5 X F30										28								
6 X F30										29								
1 X F32		2		2		2							3	2	2			
2 X F32				1				9							1			9
3 X F32							8										8	
4 X F32							7										7	
6 X F32										29								
1 X F40				2		2									2	2		
2 X F40								9										9
3 X F40																	8	
1 X F58								10										10
2 X F58								11		22							11	
3 X F58									8									
1 X F70								10										10
2 X F70										22							11	
T8 SLIMLINE																		
1 X F72						2										2		
2 X F72						1		9								1		9
3 X F72								8										8
4 X F72								7										7
T8 HO																		
1 X F48 HO				3	14		14	10							3		14	10
2 X F48 HO										22							11	
3 X F48 HO									8	25								
4 X F48 HO									7	27								
1 X F60 HO				3	14		14	10							3		14	10
2 X F60 HO										22							11	
3 X F60 HO									8	25								

T8 SLIMLINE



1" DIAMETER

T8 HO



1" DIAMETER

NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes T6 and higher.

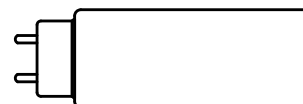


Refer to pages 32-35 for specifications on WorkHorse, WHAM & LongHorse Ballasts

LAMPS	WORKHORSE								WHAM LONGHORSE									
	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WM 1	WM 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6
4 X F60 HO										27								
1 X F72 HO				3	14		14	10							3		14	10
2 X F72 HO										22								
3 X F72 HO									8	25								
T10 LINEAR																		
1 X F40				3	14	3		10							3	3	14	10
2 X F40								11		22							11	11
3 X F40										25								
4 X F40										27								
5 X F40										28								
T10 VHO																		
1 X F48 VHO									12	19								
1 X F60 VHO									12	19								
1 X F72 VHO									12	19								
1 X F96 VHO										19								
T12 LINEAR																		
1 X F14		3	2	2	14	3	14	10				3		3	2	3	14	10
2 X F14					9		9	11									9	11
3 X F14										25								
4 X F14									7	27								
5 X F14										28								
6 X F14										29								
1 X F15		3	2	2		3		14				3		3	2	3		14
2 X F15				1	9		9	11							1		9	11
3 X F15					8		8										8	
4 X F15							7			27							7	
5 X F15										28								
6 X F15										29								
1 X F20		3	2	2	14	3		14				3		3	2	3	14	14
2 X F20					9		9	11									9	11
3 X F20							8			25								
4 X F20							7		7	27								
5 X F20										28								
6 X F20										29								
1 X F25			3	3	14		14	10							3		14	10
2 X F25					11		9			22							11	
3 X F25									8	25								
4 X F25									7	27								
1 X F30			3	3	14	3	14	10							3	3	14	10
2 X F30					11		9	11		22							11	11
3 X F30									8	25								
4 X F30									7	27								
5 X F30										28								
1 X F40				3	14	3	14	10							3	3	14	10
2 X F40							9	11		22							11	11
3 X F40									8	25								
4 X F40									7	27								
5 X F40										28								
T12 SLIMLINE																		
1 X F24			3		14	3	14	10				3				3	14	10
2 X F24					11		9	11		22							11	11
3 X F24									8	25								

1. Find your lamp type.
2. Find the quantity and wattage of lamps.
3. Look across and find the ballast you need.
4. The indicated number represents wiring diagram needed.
5. Fulham reserves the right to alter these compatibility charts without notice; please refer to www.fulham.com for latest information.

T10 LINEAR



1 1/4" DIAMETER

T10 VHO



1 1/4" DIAMETER

T12 LINEAR



1 1/2" DIAMETER

T12 SLIMLINE



1 1/2" DIAMETER



NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes T6 and higher.

FLUORESCENT

LAMPS

WORKHORSE

WHAM LONGHORSE

	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WH 1	WH 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6
4 X F24									7	27								
5 X F24										28								
1 X F36				3	14	3	14	10							3	3	14	10
2 X F36					11		9	11		22							11	11
3 X F36									8	25								
4 X F36									7	27								
5 X F36										28								
1 X F42				3	14	3		10							3	3	14	10
2 X F42								11		22							11	11
3 X F42									8	25								
4 X F42									7	27								
5 X F42										28								
1 X F48				3	14	3	14	10							3	3	14	10
2 X F48							9	11		22							11	11
3 X F48									8	25								
4 X F48									7	27								
5 X F48										28								
1 X F60				2	14	3	14	10							2	3	14	10
2 X F60							9	11		22							11	11
3 X F60									8	25								
4 X F60									7	27								
1 X F64				2	14	3	14	10							2	3	14	10
2 X F64							9	11		22							11	11
3 X F64									8	25								
4 X F64									7	27								
1 X F72				2	14	3	14	10							2	3	14	10
2 X F72							9	11		22							11	11
3 X F72									8	25								
4 X F72										27								
1 X F84				2		3	14	10							2	3	14	10
2 X F84							9	11		22							11	11
3 X F84										25								
1 X F96 (60W Only)							14	10									14	10
2 X F96 (60W Only)							9	11		22							9	11
3 X F96 (60W Only)									8									
T12 HO																		
1 X F18 HO					12		12	13	14								12	13
2 X F18 HO									11	23								
3 X F18 HO										26								
1 X F24 HO					12		12	13	14								12	13
2 X F24 HO									11	23								
3 X F24 HO										26								
1 X F30 HO					12		12	13	14								12	13
2 X F30 HO									11	23								
3 X F30 HO										26								
1 X F36 HO					12		12	13	14								12	13
2 X F36 HO									11	23								
3 X F36 HO										26								
1 X F42 HO					12		12	13	14								12	13
2 X F42 HO									11	23								
3 X F42 HO										26								
1 X F48 HO					12		12	13	14								12	13

T12 HO**1 1/2" DIAMETER**

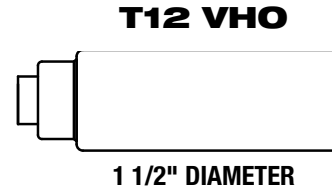
NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes T6 and higher.

FLUORESCENT

Refer to pages 32-35 for specifications on WorkHorse, WHAM & LongHorse Ballasts

LAMPS	WORKHORSE								WHAM				LONGHORSE							
	WH 1	WH 2	WH 22	WH 3	WH 33	WH 4	WH 5	WH 6	WH 7	WH 8	WM 1	WM 2	LH 1	LH 2	LH 3	LH 4	LH 5	LH 6		
2 X F48 HO									11	23										
3 X F48 HO										26										
1 X F60 HO							12	13	14								12	13		
2 X F60 HO									11	23										
3 X F60 HO										26										
1 X F64 HO							12	13	14								12	13		
2 X F64 HO									11	23										
1 X F72 HO							12	13	14								12	13		
2 X F72 HO									11	23										
1 X F84 HO							12	13	14								12	13		
2 X F84 HO										23										
1 X F96 HO							12	13	14								12	13		
2 X F96 HO (95W only)									11	23										
T12 VHO																				
1 X F48 VHO									12	19										
1 X F60 VHO									12	19										
1 X F72 VHO									12	19										
1 X F96 VHO									12	19										

1. Find your lamp type.
2. Find the quantity and wattage of lamps.
3. Look across and find the ballast you need.
4. The indicated number represents wiring diagram needed.
5. Fulham reserves the right to alter these compatibility charts without notice; please refer to www.fulham.com for latest information.



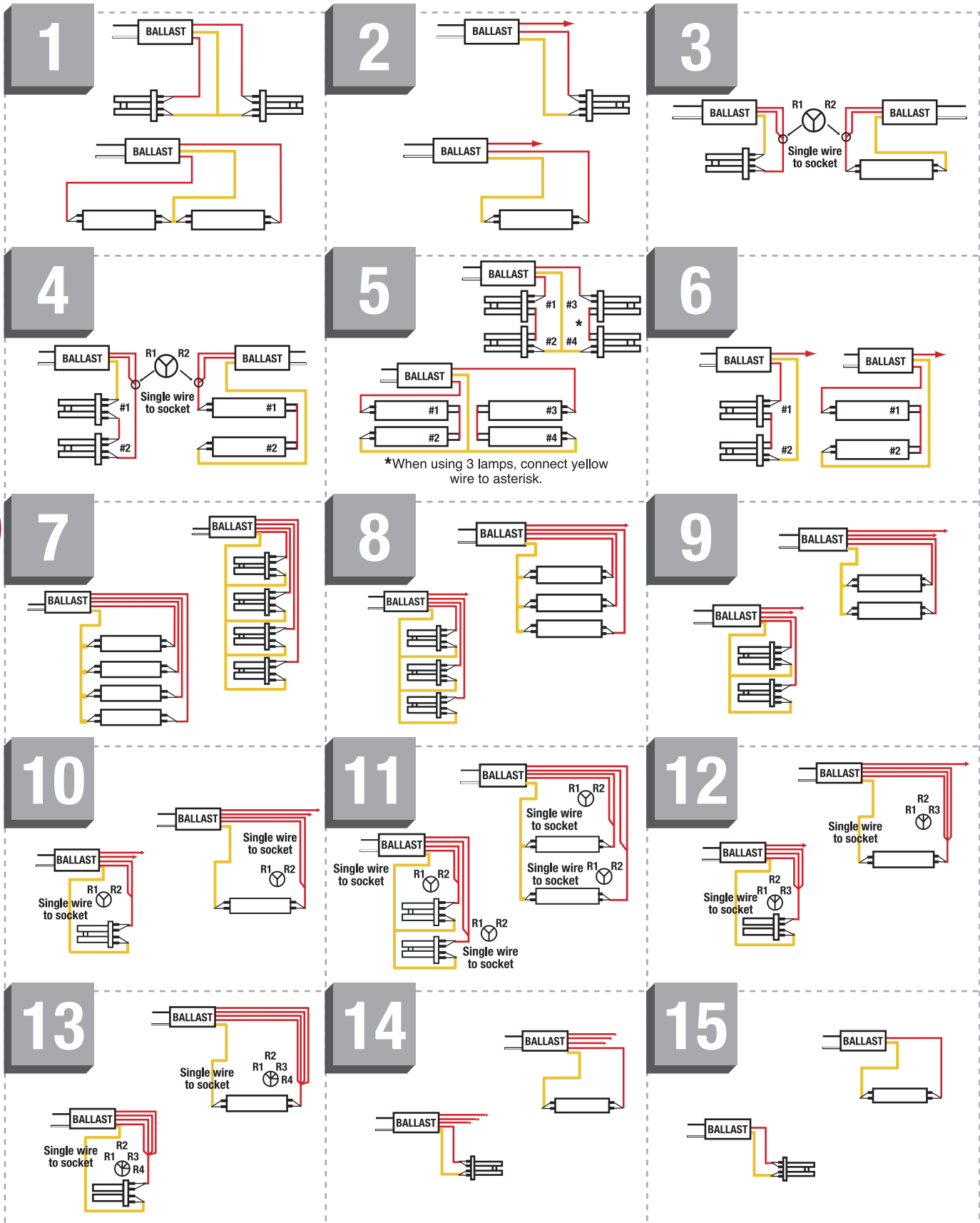
NOTE: For Canadian WorkHorse (CWH) and Canadian LongHorse (CLH) ballasts, please refer to lamp sizes T6 and higher.

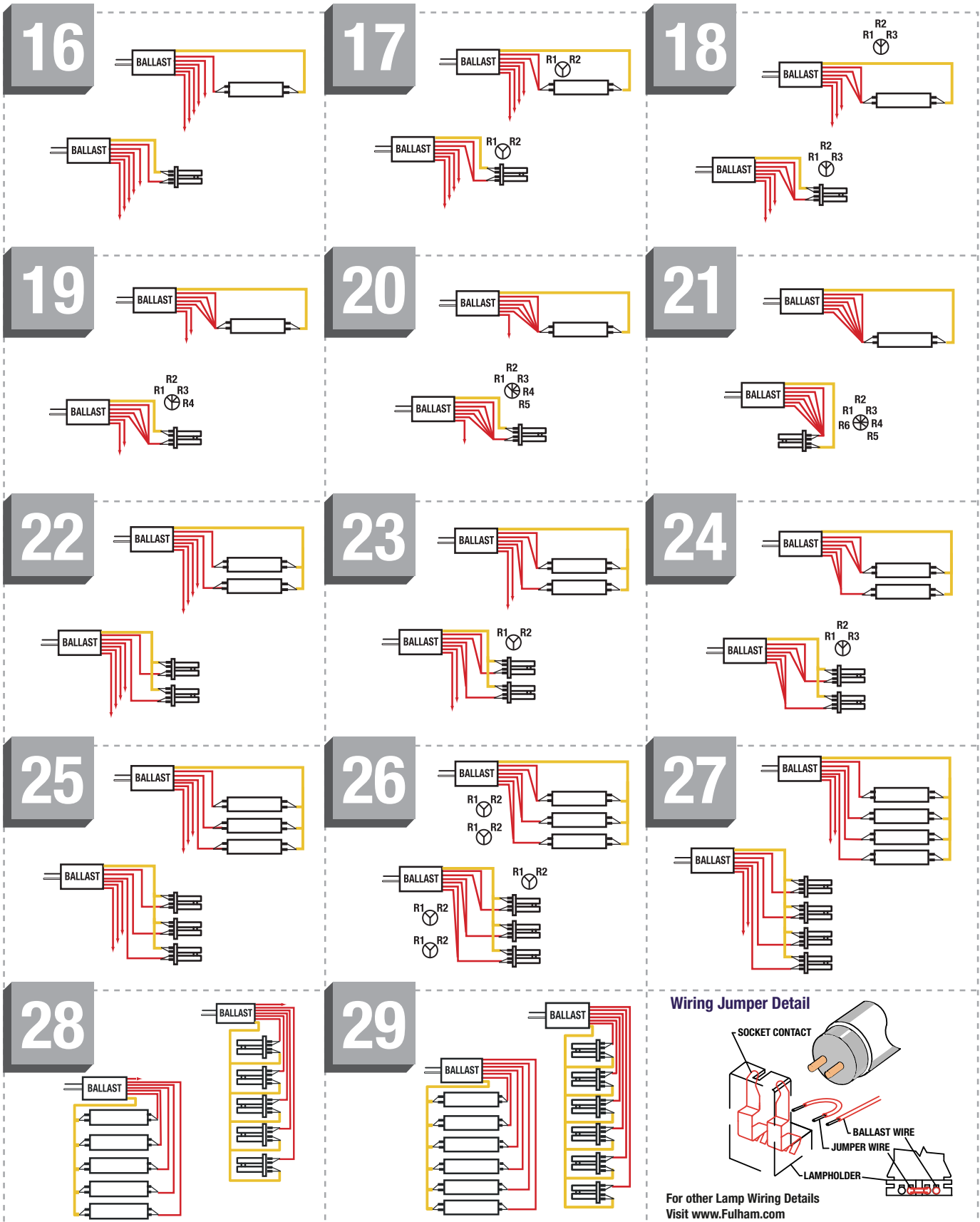


FLUORESCENT

OPERATION & INSTALLATION TIPS

1. Connect both pin sets of the socket before connecting "RED" & "YELLOW" wires.
2. Ground case in accordance with the "National Electric Code."
3. With Linear lamp use a starting aid.
4. Ballast case temperature can not exceed 70°C.
5. Remote mounting distance varies with lamp type. Contact customer service.
6. Ballast can not be used with dimmer switch but can be used with occupancy sensor. (Note: Sensor will shorten lamp life.)
7. Cap and insulate any unused red power wire. → = Cap
8. When connecting two red power wires, they must be joined to make one wire before attaching to the socket.
9. BLS (Back Leads with Studs) Dimensions:
Stud Length: 5/8", Stud Size: 8/32, Center to Center: 2"
10. Running lamps in series will reduce the turn-on cycles of both lamps.
(Configuration diagrams 4, 5, 6)





CUSTOM SOLUTIONS

Fulham is your technology partner when it comes to custom applications and solutions to your lighting needs.

We can design and build:

Custom LED Modules

Unique shapes and sizes can be created to customer specifications.

Custom LED Drivers

Built to customer specifications, available in different sizes and shapes. Proven capabilities in developing and manufacturing lines of digital addressable, controllable LED drivers (DALI and DMX drivers) as private-label items.

Custom Ballasts

Built to customer specifications, available in different sizes and shapes and can operate custom compact and linear lamps. (CCFL thru T12)

Electrical Control Systems

Custom Controls built to customer specifications.

Custom Assemblies

Wiring Harnesses, custom ballast lead lengths, Kits including ballasts with lampholders and lamps. All made to customer specifications.



FULHAM LIMITED WARRANTY

Length of Warranty and Coverage

Warranty period will be determined from the date of manufacture as indicated by the date code stamped on each product and will be covered as follows:

FireHorse® - 2 to 5 Years

FREELITE™ - 5 Years

Fulham Lighting Controls Components - 5 Years

HighHorse® Electronic HID Ballast - 3 Years

HighHorse® Magnetic HID Ballast - 2 Years

HighHorse® Induction - 5 Years (If installed per instructions)

IceHorse® Ballast - 3 Years

LongHorse® Electronic Remote Fluorescent Ballast - 5 Years

PONY® Electronic Ballast - 2 Years

PONY® Electronic SugarCube™ - 2 Years

PONY® Electronic Transformer - 2 Years

RaceHorse™ Electronic Ballast - 70°C 5 Years, 90°C 3 Years

SunHorse™ Ballast - 3 Years

SineHorse™ Ballast - 3 Years

ThoroLED™ Drivers - 2 to 5 Years

ThoroLED™ Modules - 1 Year

WorkHorse® Electronic Fluorescent Ballast - 5 Years

Warranty Conditions

Fulham extends this express limited warranty only to the original purchaser or to the first user. This constitutes the complete warranty for the ballast. Fulham is not responsible for any auxiliary equipment not furnished by Fulham, which is used in connection with or attached to the ballast, or for operation of the ballast with any auxiliary equipment. Damage to all such equipment is expressly excluded from this warranty. In addition, Fulham is not responsible for any damage to the ballast resulting from the use of auxiliary equipment not supplied by Fulham.

Warranty Conditions Not Covered

This warranty is not applicable to any ballast manufactured by Fulham not installed and operated in accordance with:

- * Underwriters Laboratories Inc. (UL)
- * National Electrical Code (NEC)
- * Applicable international federal, state and local codes
- * Remote applications beyond specifications
 - WorkHorse - Length of the leads
 - HighHorse - 9 feet
 - LongHorse - 20 feet
- * Fulham specific, most recent instructions and application guidelines provided for installation of the ballast

Additionally, this warranty is not applicable to Fulham manufactured ballasts that have been subjected to excessive stress including, but not limited to, operating temperatures exceeding the recommended maximum temperature on any part of the ballast.

Obtaining Warranty Service

If within the warranty period it appears that the installed ballast does not meet the warranty conditions specified, the purchaser must notify Fulham Co., Inc. at 323-599-5001 (or through email at warranty@fulham.com) of its warranty claim. Fulham or its authorized service company will provide warranty service directly to you.

General Provisions

All responsibilities regarding the ballast are set forth by this warranty. Replacement or repairs of the ballast is your exclusive remedy. This warranty is given in lieu of all other express warranties. Implied warranties, including those without limitation, warranties of merchant ability and fitness for a particular purpose, are limited to the duration of this limited warranty. Fulham shall in no event be liable for damages in excess of the purchase price of the ballast, for any loss of use, loss of time, inconvenience, commercial loss, lost profits or savings or other incidental, special or consequential damages arising out of the use or inability to use such product, to the full extent such may be claimed by law.

State Law Exceptions

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, therefore the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and purchasers may have other rights that vary from state to state.

Returned Goods Authorizations (RGA)

Customers shall contact Fulham directly at 323-599-5000 for all RGA's.

After receiving the RGA, the user shall promptly return the product at the user's expense to Fulham Co., Inc. after receiving instructions as to when and where to ship product. Failure to follow this procedure shall void this warranty.

Should the number of pieces received by Fulham differ from the RGA either +/-, the customer will be notified and adjustments will be made at that time.

Fulham Co. Inc. reserves the right to examine all failed ballasts and reserves the right to be the sole judge as to whether any ballasts are defective and covered under this warranty.

FULHAM®

Lighting... Global. Intelligent. Sustainable.

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Zhaga



NALMCO

idea

NECA

National Association of Independent Lighting Distributors, Inc.

NAED



CATALOG V42-A04-CAN