ORDERING INFORMATION

How to Order

Advance Transformer has developed the industry's broadest distribution system for electronic ballasts. More than 3000 stocking distributors nationwide. For information on the distributor best able to serve your needs, please call 800-372-3331.

Electronic Ballast Part Number Breakdown

I	CF	-	2	S	26	-	H1	-	LD

CFL Mounting/Connector Options

BS = Bottom mounting studs with single entry color coded connectors
LD = Length mounting feet with dual entry color coded connectors
LS = Length mounting feet with single entry color coded connectors
LD QS = Quik-Start

Linear Fluorescent Mounting/Connector Options

2LS = 2 Level Switching

CFL Can Desription

H1 = Hybrid metal / plastic case, size 1
L2 = Linear, style 2
M1 = Metal case, size 1
M2 = Metal case, size 2
M3 = Metal case, size 3
M4 = Metal case, size 4
M5 = Metal case, size 5
S1 = Square, style 1
S2 = Square, style 2
SC = Small can

Linear Fluorescent Can Desription

90C = 90˚C maximum case temperature rating

Lamp Watts (Primary lamp)

Wiring Configuration

D = 2D, series
H = Hight Power, series
P = Parallel
Q = Quad CFL, series
S = Series
T = Triple CFL, series
TTS = Long twin tube, series
TTP = Long twin tube, parallel

Maximum Number of Lamps

Family Name

CF = SmartMate
CN = Centium
DA & DL = ROVR
EL = Standard
EZ = Mark 10 *Powerline*
MB = Matchbox
ZT = Mark 7 *0-10V*

Input Voltage

G = 347V
H = IntelliVolt-Hi (347V through 480V, 50/60 Hz)
I = IntelliVolt (120V through 277V, 50/60 Hz)
R = 120V
V = 277V

Corporate Offices
(800) 322-2086

Press 1
To reach Customer Service
Press 2
If you know the last name and you will reach the spell by name directory
Press 0
Or stay on the line to be connected to the operator

You may dial the four digit extension of the person you want to reach at any time

Visit our web site at
www.advance transformer.com

Customer Support/
Technical Service
(800) 372-3331
+1 (847) 390-5000 (International)
Dial the four digit extension of the person you want to reach

Press 1
For customer support
Press 2
For technical applications, or warranty information
Press 4
To dial by name

Form No. EL-2240-R01 3/04

Advance Transformer Co. • O'Hare International Center
10275 West Higgins Road • Rosemont, Illinois 60018
Telephone: (800) 322-2086 • FAX: (888) 423-1882
Customer Support / Technical Service: (800) 372-3331
www.advancetransformer.com

A DIVISION OF PHILIPS ELECTRONICS NORTH AMERICA CORPORATION

ADVANCE

CFL Ballasts

for 4-pin Compact Fluorescent Lamps

SmartMate® • Centium® • Standard Electronic • Mark 10™ *Powerline* • Mark 7™ *0-10V* • ROVR™ • E-STAR™ Series

Your Source for CFL Solutions...

Advance is proud to offer the industry's most comprehensive line of electronic ballasts for compact fluorescent lamps (CFLs)...

Advance's extensive CFL line provides a broad range of options, from fixed light output to dimming technology and commercial to residential solutions. The industry's most trusted brand now offers the broadest selection of CFL ballast options on the market. Consistent with its entire product line, Advance's family of CFL ballasts continues to reflect the tradition of unparalleled quality and innovation that has earned Advance a market leadership position for over five decades:

- Largest ballast manufacturer in North America
- Broadest portfolio of ballasts in the industry (Fluorescent, HID, LED)
- Best-in-Class
  - Customer Service
  - Fulfillment
  - Technical Support
  - Warranty Protection
- Unparalleled Research & Development
- Extensive Network of World-Class Partners

CFL Ballast Guide

	Page(s)
Quick Reference Lookup Table ...for a multitude of lamp applications	4 - 5
Ballast Features Guide ...extended descriptions	6
SmartMate ...fixed light output, programmed start for quad, triple and twin tube lamps	7 - 11
Centium ...less than 10% THD, instant start & programmed start for long twin tube lamps	12 - 14
Standard Electronic ...less than 20% THD, rapid start operation for long twin tube lamps	15
Mark 10 ***Powerline*** ...simple 2-wire dimming, 5-100%	16 - 17
Mark 7 ***0-10V*** ...low voltage dimming, 3-100%	18 - 19
ROVR ...DALI protocol controllable ballast, 3-100%	20 - 21
E-STAR Series ...featuring “Quik-Start” lamp ignition	22 - 23
Ballast Specifications ...characteristics, performance, regulatory requirements	24 - 25
Ballast Drawings ...housing and mounting options	26 - 27

Ask About ENERGY STAR

Lamp Type	NEMA Lamp Designation	No. of Lamps	Ballast Family	Fixed or Dimming	Page Number
Twin Tube	CFT7W/2G7	1 or 2	Matchbox	Fixed	22
	CFT9W2/2G7				
Quad Tube	CFQ13W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 7 *0-10V*	Dimming	18
			ROVR		20
			Matchbox	Fixed	22
	CFQ18W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
		1	Matchbox	Fixed	22
	CFQ26W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
		1	Matchbox	Fixed	22
Triple Tube	CFTR13W/GX24q	1 or 2	Mark 7 *Powerline*	Dimming	18
			ROVR		20
			Matchbox	Fixed	22
	CFTR18W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
		1	Matchbox	Fixed	22
	CFTR26W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
		1	Matchbox	Fixed	22
	CFTR32W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	CFTR42W/G24q	1 or 2	SmartMate	Fixed	7
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	CFTR57W/GX24q	1 or 2	SmartMate	Fixed	7
		1	Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	CFTR70W/GX24q	1 or 2	SmartMate	Fixed	7
		1	Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20

Lamp Type	NEMA Lamp Designation	No. of Lamps	Ballast Family	Fixed or Dimming	Page Number
PL-H	PL-H60W/4P*	1 or 2	SmartMate	Fixed	7
	PL-H85W/4P*	1			
	PL-H120W/4P*				
2-D	F102D/4P	1 or 2	SmartMate	Fixed	7
	F162D/4P				
	F212D/4P				
	F282D/4P				
	F38D/4P				
Circline	FC9T5 (22W)	1 or 2	SmartMate	Fixed	7
			Centium		12
		1	Matchbox		22
	FC12T5 (40W)	1	SmartMate	Fixed	7
			Centium		12
	FC9T5 (22W) + FC12T5 (40W)	1 ea.	SmartMate	Fixed	7
			Centium		12
	FC12T5/HO (55W)	1 or 2	Centium	Fixed	12
			Mark 10 Powerline	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	FC8T9 (22W)	1	Matchbox	Fixed	22
Long Twin Tube	FT18W/2G11/RS	1	Matchbox	Fixed	22
	FT24W/2G11	2	SmartMate	Fixed	7
		1	Centium		12
	FT36W/2G11	1 or 2	Centium	Fixed	12
			Standard		15
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	FT40W/2G11/RS	2	SmartMate	Fixed	7
			Centium		12
			Standard		15
		1 or 2	Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	FT50W2G11	1 or 2	Standard	Fixed	15
	FT55W/2G11	1 or 2	Centium	Fixed	12
			Standard		15
			Mark 10 *Powerline*	Dimming	16
			Mark 7 *0-10V*		18
			ROVR		20
	FT80W/2G11	1	Centium	Fixed	12
			Mark 7 *0-10V*	Dimming	18

* NEMA designation not yet established

Features Guide

IntelliVolt® Technology

Universal input voltage from 120 to 277V, at 50 or 60Hz.

Simplified Wiring

Wiring accuracy is almost guaranteed!

Dual-Entry, Color-Coded Connector

Dual-entry connector accessible on the side and bottom allows the same ballast to be used with side or bottom exit leads.

- With color-coded connectors, wiring accuracy is almost a certainty.
- Poke-in wire traps minimize fixture assembly and ballast installation time.

Multi-Lamp Capability

Each ballast covers multiple lamp wattages and multiple number of lamps, thereby encompassing a wide variety of applications. These include Twin Tube, PL-H, Quad and Triple Tube, Circline, 2D, and Long Twin Tube lamps.

SuperCool™ Operation

Superior thermal performance

Innovative engineering design and precision component utilization, provide superior thermal performance and extended ballast life due to cooler ballast operation.

Custom Micro-Controller Circuitry

Precision control

The custom micro-controller circuitry provides:

- Programmed starting for extended lamp life in frequent switching applications.
- EOL protection circuit safely removes power from the lamp as it nears end of life (EOL= end of life)
- Improved reliability due to precision control
- Flicker-free operation
- Auto-restart which eliminates the need to reset the power mains after lamp replacement.

Dimming

Reduced energy consumption and the ability to control one's environment are two very practical reasons to use dimming ballasts.

Class B Consumer EMI

Meets Energy Star and Consumer EMI requirements. For installation in residential applications.

Energy Star

Meets ballast requirements of the EPA's Energy Star lighting fixture program.

Ask About ENERGY STAR

Feature	SmartMate	SmartMate QSE	SmartMate PL-H	Mark 10	Mark 7	ROVR	Matchbox
InvelliVolt	✓	✓	✓	✓	✓	✓	
Simplified Wiring	✓	✓	✓	✓	✓	✓	
MultiLamp Capability	✓	✓	✓	✓	✓	✓	
SuperCool Operation	✓	✓	✓	✓	✓	✓	
Micro-controller Circuitry	✓	✓	✓	✓	✓	✓	
Dimming				✓	✓	✓	
Class B Consumer EMI		✓					✓
Energy Star		✓					✓

SmartMate®

Advance has combined IntelliVolt technology and multi-lamp capability with dual-entry, color-coded connectors to create the ultimate CFL ballast family. Today's CFL systems provide options to replace traditional incandescent and HID applications.

To meet the demand for shorter lamp ignition time, Advance has developed SmartMate models featuring Quik-Start (QSE) technology.

This new technology ignites 13, 26 or 32 watt CFL lamps in less than 1 second, vs. the standard 1.25 to 1.50 seconds for programmed-start circuits.

It should be noted that SmartMate with "Quik-Start" (minimum 15,000 on/off cycles at 30 sec. on/30 sec. off) is not recommended for applications having frequent switching or with occupancy sensors.

SmartMate's custom micro-controller circuitry delivers precision-controlled light levels, plus these additional benefits:

- SuperCool Operation, which extends ballast life.
- Programmed Starting, for extended lamp life, particularly in frequent on-off applications
- EOL protection circuit safely removes power from the lamp as it nears end of life.
- Flicker-free Operation
- Auto-restart, no need to reset the power mains after lamp replacement

Continuing with these features and benefits which add to SmartMate's versatility:

- Lightweight, compact size
- Energy efficiency
- Silent operation
- THD <10%
- No infrared interference
- Power Factor >96%

Applications

- Restaurants
- Reception Areas
- Houses of Worship
- Educational Facilities
- Conference and Meeting Rooms
- Hotel and Convention Center Ballrooms

Powered by ADVANCE® Program Eligible

Now that's smart, mate!

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	SA						
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E)												
1	13	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.13	16	1.00	10	0.96	Size 1/ 160
			230				0.07					
			277				0.06					
2	13	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.25	29	1.00	10	0.99	Size 1/ 160
			230				0.13					
			277				0.11					
CFQ18W/G24q - 18W CFL Quad Tube Lamp (PL-C18W/4P, F18DBX/4P, CF18DD/E)												
1	18	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.16	19	1.00	10	0.97	Size 1/ 160
			230				0.08					
			277				0.07					
2	18	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.30	35	0.95	10	0.99	Size 1/ 160
			230				0.16					
			277				0.13					
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E)												
1	26	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.23	27	1.00	10	0.98	Size 1/ 160
			230				0.12					
			277				0.10					
2	26	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.43	51	1.00	10	0.99	Size 1/ 160
			230				0.22					
			277				0.19					
			120	ICF-2S42-M2-XX① ②	✓	✓	0.43	52	1.00	10	0.98	Size 2/ 160
			230				0.22					
			277				0.19					
CFTR13W/GX24q - 13W CFL Triple Tube Lamp												
1	13	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.13	16	1.00	10	0.96	Size 1/ 160
			230				0.07					
			277				0.06					
2	13	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.25	29	1.00	10	0.99	Size 1/ 160
			230				0.13					
			277				0.11					
CFTR18W/GX24q - 18W CFL Triple Tube Lamp (PL-T18W, F18TBX/4P, CF18DT/E)												
1	18	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.17	20	1.05	10	0.97	Size 1/ 160
			230				0.09					
			277				0.08					
2	18	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.33	39	1.05	10	0.99	Size 1/ 160
			230				0.17					
			277				0.14					
CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)												
1	26	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.24	29	1.10	10	0.98	Size 1/ 160
			230				0.13					
			277				0.11					
2	26	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.45	54	1.00	10	0.99	Size 1/ 160
			230				0.23					
			277				0.20					
			120	ICF-2S42-M2-XX① ②	✓	✓	0.46	55	1.00	10	0.98	Size 2/ 160
			230				0.24					
			277				0.21					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.
② Retrofit/replacement kits available in these models, contact factory.

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	SA						
CFTR32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W, F32TBX/4P, CF32DT/E)												
1	32	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.31	36	0.98	10	0.98	Size 1/ 160
			230				0.16					
			277				0.13					
2	32	0/-18	120	ICF-2S42-M2-XX① ②	✓	✓	0.57	68	0.98	10	0.98	Size 2/ 160
			230				0.30					
			277				0.25					
CFTR42W/GX24q - 42W CFL Triple Tube Lamp (PL-T42W, F42TBX/4P, CF42DT/E)												
1	42	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.38	46	0.98	10	0.98	Size 1/ 160
			230				0.20					
			277				0.17					
2	42	0/-18	120	ICF-2S42-M2-XX① ②	✓	✓	0.78	93	0.97	10	0.99	Size 2/ 160
			230				0.41					
			277				0.33					
CFTR57W/GX24q - 57W CFL Lamp (F57QBX/4P, CF57DT/E)												
1	57	32/0	120	ICF-2S42-M2-XX① ②	✓	✓	0.50	59	0.94	10	0.98	Size 2/ 160
			230				0.26					
			277				0.21					
2	57	0/-18	120	ICF-2S70-M4-XX①	✓	✓	1.07	128	1.00	10	0.98	Size 4/ 160
			230				0.56	126				
			277				0.46	126				
CFTR70W/GX24q - 70W CFL Lamp (F70QBX/4P, CF70DT/E)												
1	70	32/0	120	ICF-2S42-M2-XX① ②	✓	✓	0.63	75	0.96	10	0.98	Size 2/ 160
			230				0.32					
			277				0.27					
2	70	0/-18	120	ICF-2S70-M4-XX①	✓	✓	1.30	156	1.00	10	0.98	Size 4/ 160
			230				0.68	153				
			277				0.56	152				

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	SA						
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E)												
1	13	0/-18	120	ICF-2S13-H1-LD-QS	✓	✓	0.13	16	1.00	10	0.96	Size 1/ 160
			230				0.07					
			277				0.06					
2	13	0/-18	120	ICF-2S13-H1-LD-QS	✓	✓	0.25	29	1.00	10	0.99	Size 1/ 160
			230				0.13					
			277				0.11					
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E)												
1	26	0/-18	120	ICF-2S26-H1-LD-QS	✓	✓	0.23	27	1.00	10	0.98	Size 1/ 160
			230				0.12					
			277				0.10					
2	26	0/-18	120	ICF-2S26-H1-LD-QS	✓	✓	0.43	51	1.00	10	0.99	Size 1/ 160
			230				0.22					
			277				0.19					
CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)												
1	26	0/-18	120	ICF-2S26-H1-LD-QS	✓	✓	0.24	29	1.10	10	0.98	Size 1/ 160
			230				0.13					
			277				0.11					
2	26	0/-18	120	ICF-2S26-H1-LD-QS	✓	✓	0.45	54	1.00	10	0.99	Size 1/ 160
			230				0.23					
			277				0.11					
CFTR32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W, F32TBX/4P, CF32DT/E)												
1	32	0/-18	120	ICF-2S26-H1-LD-QS	✓	✓	0.31	36	0.98	10	0.98	Size 1/ 160
			230				0.16					
			277				0.13					

T4
Quik-Start Enabled

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
CFS10W/GR10q - 10W 2D Lamp (F10 2D/4P)												
1	10	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.11	13	1.05	14	0.96	Size 1/ 160
			230				0.06					
			277				0.05					
2	10	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.19	23	0.95	11	0.97	Size 1/ 160
			230				0.10					
			277				0.09					
CFS16W/GR10q - 16W 2D Lamp (F16 2D/4P)												
1	16	0/-18	120	ICF-2S13-XX-XX① ②	✓	✓	0.14	17	1.00	12	0.96	Size 1/ 160
			230				0.07					
			277				0.06					
2	16	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.31	37	1.00	10	0.99	Size 1/ 160
			230				0.16					
			277				0.13					
CFS21W/GR10q - 21W 2D Lamp (F21 2D/4P)												
1	21	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.16	20	0.90	12	0.97	Size 1/ 160
			230				0.08					
			277				0.07					
2	21	0/-18	120	ICF-2S18-XX-XX① ②	✓	✓	0.33	40	0.91	10	0.99	Size 1/ 160
			230				0.17					
			277				0.14					
			120	ICF-2S26-XX-XX① ②	✓	✓	0.42	51	1.12	10	0.99	Size 1/ 160
			230				0.22					
			277				0.18					
CFS28W/GR10q - 28W 2D Lamp (F28 2D/4P)												
1	28	0/-18	120	ICF-1D38-H1-LD	✓	✓	0.23	27	1.00	10	0.98	Size 1/ 160
			230				0.12					
			277				0.10					
2	28	0/-18	120	ICF-2S42-M2-XX① ②	✓	✓	0.48	57	1.00	10	0.98	Size 2/ 160
			230				0.25					
			277				0.21					
CFS38W/GR10q - 38W 2D Lamp (F38 2D/4P)												
1	38	0/-18	120	ICF-1D38-H1-LD	✓	✓	0.26	31	0.85	10	0.98	Size 1/ 160
			230				0.14					
			277				0.11					
2	38	0/-18	120	ICF-2S42-M2-XX① ②	✓	✓	0.55	62	0.80	10	0.98	Size 2/ 160
			230				0.29					
			277				0.23					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.
② Retrofit/replacement kits available in these models, contact factory.

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FC9T5 - 22W Circline Lamp												
1	22	0/-18	120	ICF-1D38-H1-LD	✓	✓	0.21	25	1.00	13	0.98	Size 1/ 160
			230				0.11					
			277				0.09					
FC12T5 - 40W Circline Lamp												
1	40	0/-18	120	ICF-1D38-H1-LD	✓	✓	0.32	38	0.95	10	0.98	Size 1/ 160
			230				0.17					
			277				0.14					
(1) FC9T5 & (1) FC12T5 - (1) 22W & (1) 40W Circline Lamp												
2	22 & 40	0/-18	120	ICF-2S42-M2-XX① ②	✓	✓	0.51	61	0.85	10	0.98	Size 2/ 160
			230				0.27					
			277				0.22					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.
② Retrofit/replacement kits available in these models, contact factory.

Circline

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT24W/2G11 - 24/27W Long Twin Tube Lamp (PL-L 24W, F27BX/RS, FT24DL)												
2	24 - 27	0/-18	120	ICF-2S26-XX-XX① ②	✓	✓	0.41	48	0.93	10	0.99	Size 1/ 160
			230				0.21					
			277				0.18					
			120	ICF-2S42-XX-XX① ②	✓	✓	0.40	48	0.93	15	0.98	Size 2/ 160
			230				0.21					
			277				0.18					
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L 40W, F40BX, FT40DL/RS)												
1	40	0/-18	120	ICF-2S42-M2-XX① ②	✓	✓	0.66	78	0.95	10	0.99	Size 2/ 160
			230				0.34					
			277				0.28					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.
② Retrofit/replacement kits available in these models, contact factory.

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
PL-H 60W/4P												
1	60	-22/-30	120	ICF-1H120-M4-XX①	✓	✓	0.59	70	1.00	15	0.97	Size 4/ 160
			230				0.31					
			277				0.26					
2	60	-22/-30	120	ICF-1H120-M4-XX①	✓	✓	1.16	139	1.00	10	0.98	Size 4/ 160
			230				0.60	136				
			277				0.50	136				
PL-H 85W/4P												
1	85	-22/-30	120	ICF-1H120-M4-XX①	✓	✓	0.82	98	1.00	10	0.98	Size 4/ 160
			230				0.43	97				
			277				0.36	97				
PL-H 120W/4P												
1	120	-22/-30	120	ICF-1H120-M4-XX①	✓	✓	1.16	1.16	1.00	10	0.98	Size 4/ 160
			230				0.60	0.60				
			277				0.50	0.50				

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.

Class B Quik-Start Enabled

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E)												
1	13	0/-18	120	RCF-2S13-H1-LD-QS	✓	✓	0.13	16	1.00	10	0.96	Size 1/ 160
			230				0.07					
			277				0.06					
2	13	0/-18	120	RCF-2S13-H1-LD-QS	✓	✓	0.25	29	1.00	10	0.99	Size 1/ 160
			230				0.13					
			277				0.11					
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E)												
1	26	0/-18	120	RCF-2S26-H1-LD-QS	✓	✓	0.23	27	1.00	10	0.98	Size 1/ 160
			230				0.12					
			277				0.10					
2	26	0/-18	120	RCF-2S26-H1-LD-QS	✓	✓	0.43	51	1.00	10	0.99	Size 1/ 160
			230				0.22					
			277				0.19					
CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)												
1	26	0/-18	120	RCF-2S26-H1-LD-QS	✓	✓	0.24	29	1.10	10	0.98	Size 1/ 160
			230				0.13					
			277				0.11					
2	26	0/-18	120	RCF-2S26-H1-LD-QS	✓	✓	0.45	54	1.00	10	0.99	Size 1/ 160
			230				0.23					
			277				0.11					
CFTR32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W, F32TBX/4P, CF32DT/E)												
1	32	0/-18	120	RCF-2S26-H1-LD-QS	✓	✓	0.31	36	0.98	10	0.98	Size 1/ 160
			230				0.16					
			277				0.13					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.

Centium®

Advance's family of Centium electronic ballasts is available in two lamp ignition circuits - *Instant Start* for Long Twin Tube fluorescent lamps, and *Programmed Start* for Long Twin Tube and T5/HO fluorescent lamps.

Instant Start models deliver maximum energy-savings and feature Advance's low profile, "small can" (SC), which facilitates versatility in new housing designs while maintaining the standard ballast mounting foot print of 9½".

Programmed Start models ensure optimum lamp life in frequent switching applications associated with occupancy sensors or motion detectors.

Applications

- Auditoriums
- Boardrooms
- Conference Rooms
- Department Stores
- Educational Facilities
- Healthcare Facilities
- Hotels
- Houses of Worship
- Private and Executive Offices
- Restaurants
- Specialty Stores

Instant Start

FT5

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L40W, F40BX, FT40DL/RS)												
1	40	0/-18	120	RCN-1TTP40-SC	✓	✓	0.35	41	0.90	10	0.98	Fig. B/70
			277	VCN-1TTP40-SC	✓	✓	0.16					
			120	RCN-2TTP40-SC	✓	✓	0.38	44	1.00	10	0.99	
			277	VCN-2TTP40-SC	✓	✓	0.16		0.97	15	0.97	
			347	GCN-2TTP40-SC	✓	✓	0.13	42	1.04	10	0.96	
2	40	0/-18	120	RCN-2TTP40-SC	✓	✓	0.62	72	0.88	10	0.99	Fig. B/71
			277	VCN-2TTP40-SC	✓	✓	0.26					
			347	GCN-2TTP40-SC	✓	✓	0.19	65	0.88	10	0.98	
			120	RCN-3TTP40-SC	✓	✓	0.66	78	0.97	10	0.99	
			277	VCN-3TTP40-SC	✓	✓	0.28		0.95			
3	40	0/-18	120	RCN-3TTP40-SC	✓	✓	0.88	103	0.86	10	0.99	Fig. B/72
			277	VCN-3TTP40-SC	✓	✓	0.37					

Programmed Start

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FC12T5/HO (55W Circline)												
1	55	0/-18	120	ICN-2S54	✓	✓	0.46	55	0.87	15	0.96	Fig. D/169
			230		✓	✓	0.25					
			277		✓	✓	0.21					
			120	ICN-2S54-90C	✓	✓	0.46	55	0.87	15	0.96	Fig. D/169
			230		✓	✓	0.25					
			277		✓	✓	0.21					
			347	HCN-2S54-90C	✓	✓	0.16	55	0.87	10	0.98	Fig. D/169
			480		✓	✓	0.12					
2	55	0/-18	120	ICN-2S54	✓	✓	0.89	106	0.85	10	0.98	Fig. D/169
			230		✓	✓	0.45	103				
			277		✓	✓	0.38					
			120	ICN-2S54-90C	✓	✓	0.89	106	0.85	10	0.98	Fig. D/169
			230		✓	✓	0.45	103				
			277		✓	✓	0.38					
			347	HCN-2S54-90C	✓	✓	0.31	106	0.85	10	0.98	Fig. D/169
			480		✓	✓	0.22					

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT24W/2G11 - 24/27W Long Twin Tube Lamp (PL-L24W, F27BX/RS, FT24DL)												
1	24	0/-18	120	ICN-2S24	✓	✓	0.23	27	1.02	10	0.98	Fig. D/169
			230		✓	✓	0.12					
			277		✓	✓	0.10					
			120	ICN-2S39	✓	✓	0.24	29	1.12	15	0.95	Fig. D/169
			230		✓	✓	0.14					
			277		✓	✓	0.12					
2	24	0/-18	120	ICN-2S24	✓	✓	0.44	52	1.00	10	0.98	Fig. D/169
			230		✓	✓	0.23					
			277		✓	✓	0.19					
			120	ICN-2S39	✓	✓	0.46	54	1.10	10	0.98	Fig. D/169
			230		✓	✓	0.24					
			277		✓	✓	0.20					
FT36W/2G11 - 36/39W Long Twin Tube Lamp (PL-L36W, F39BX/RS, FT36DL)												
1	36-39	0/-18	120	ICN-2S24	✓	✓	0.29	34	0.90	10	0.98	Fig. D/169
			230		✓	✓	0.15					
			277		✓	✓	0.13					
			120	ICN-2S39	✓	✓	0.30	36	0.96	15	0.95	Fig. D/169
			230		✓	✓	0.16					
			277		✓	✓	0.13					
			120	ICN-2S54	✓	✓	0.39	46	1.22	20	0.96	Fig. D/169
			230		✓	✓	0.21					
			277		✓	✓	0.18					
			120	ICN-2S54-90C	✓	✓	0.39	46	1.22	20	0.96	Fig. D/169
			230		✓	✓	0.21					
			277		✓	✓	0.18					
			347	HCN-2S54-90C	✓	✓	0.13	46	1.22	10	0.98	Fig. D/169
			480		✓	✓	0.10			15	0.95	
			120	ICN-4S54-90C-2LS	✓	✓	0.39	46	1.20	20	0.97	Fig. E/170
			230		✓	✓	0.21			33	0.90	
			277		✓	✓	0.18					
2	36-39	0/-18	120	ICN-2S39	✓	✓	0.59	69	0.94	10	0.98	Fig. D/169
			230		✓	✓	0.30					
			277		✓	✓	0.25					
			120	ICN-2S54	✓	✓	0.75	89	1.20	10	0.98	Fig. D/169
			230		✓	✓	0.38	86				
			277		✓	✓	0.32					
			120	ICN-2S54-90C	✓	✓	0.75	89	1.20	10	0.98	Fig. D/169
			230		✓	✓	0.38	86				
			277		✓	✓	0.32					
			347	HCN-2S54-90C	✓	✓	0.26	89	1.20	10	0.98	Fig. D/169
			480		✓	✓	0.19					
			120	ICN-4S54-90C-2LS	✓	✓	0.74	88	1.20	20	0.95	Fig. E/170
			230		✓	✓	0.39					
			277		✓	✓	0.33					
3	36-39	0/-18	120	ICN-4S54-90C-2LS	✓	✓	1.11	133	1.20	10	0.98	Fig. E/170
			230		✓	✓	0.58	132				
			277		✓	✓	0.49					
4	36-39	0/-18	120	ICN-4S54-90C-2LS	✓	✓	1.47	176	1.20	10	0.98	Fig. E/170
			230		✓	✓	0.77	173				
			277		✓	✓	0.64					

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L40W, F40BX, FT40DL/RS)												
1	40	0/-18	120	ICN-2S24	✓	✓	0.40	47	1.00	10	0.98	Fig. D/169
			230		✓	✓	0.21					
			277		✓	✓	0.17					
			120	ICN-2S39	✓	✓	0.42	50	1.10	10	0.98	Fig. D/169
			230		✓	✓	0.22					
			277		✓	✓	0.19					
FT50W/2G11/RS - 50W Long Twin Tube Lamp (PL-L50W, F50BX/RS)												
1	50	0/-18	120	ICN-2S54	✓	✓	0.51	61	1.12	15	0.96	Fig. D/169
			230		✓	✓	0.27					
			277		✓	✓	0.23					
			120	ICN-2S54-90C	✓	✓	0.51	61	1.12	15	0.96	Fig. D/169
			230		✓	✓	0.27					
			277		✓	✓	0.23					
			347	HCN-2S54-90C	✓	✓	0.18	61	1.12	10	0.98	Fig. D/169
			480		✓	✓	0.13				0.96	
			120	ICN-4S54-90C-2LS	✓	✓	0.51	61	1.09	15	0.98	Fig. E/170
			230		✓	✓	0.27			30	0.90	
			277		✓	✓	0.25					
2	50	0/-18	120	ICN-2S54	✓	✓	0.99	118	1.10	10	0.98	Fig. D/169
			230		✓	✓	0.51	115				
			277		✓	✓	0.43					
			120	ICN-2S54-90C	✓	✓	0.99	118	1.10	10	0.98	Fig. D/169
			230		✓	✓	0.51	115				
			277		✓	✓	0.43					
			347	HCN-2S54-90C	✓	✓	0.34	118	1.10	10	0.98	Fig. D/169
			480		✓	✓	0.25					
			120	ICN-4S54-90C-2LS	✓	✓	0.98	117	1.09	10	0.98	Fig. E/170
			230		✓	✓	0.51	116				
			277		✓	✓	0.43					
3	50	0/-18	120	ICN-4S54-90C-2LS	✓	✓	1.49	178	1.10	10	0.98	Fig. E/170
			230		✓	✓	0.78	175				
			277		✓	✓	0.65					
4	50	0/-18	120	ICN-4S54-90C-2LS	✓	✓	1.96	235	1.10	10	0.98	Fig. E/170
			230		✓	✓	1.01	230				
			277		✓	✓	0.84					
FT55W/2G11 - 55W Long Twin Tube Lamp (F55BX, FT55DL)												
1	55	0/-18	120	ICN-2S54	✓	✓	0.49	58	0.92	15	0.96	Fig. D/169
			230		✓	✓	0.26					
			277		✓	✓	0.22					
			120	ICN-2S54-90C	✓	✓	0.49	58	0.92	15	0.96	Fig. D/169
			230		✓	✓	0.26					
			277		✓	✓	0.22					
			347	HCN-2S54-90C	✓	✓	0.17	58	0.92	10	0.98	Fig. D/169
			480		✓	✓	0.13				0.96	
			120	ICN-4S54-90C-2LS	✓	✓	0.49	58	0.89	15	0.98	Fig. E/170
			230		✓	✓	0.26			30	0.90	
			277		✓	✓	0.23					
2	55	0/-18	120	ICN-2S54	✓	✓	0.94	112	0.90	10	0.98	Fig. D/169
			230		✓	✓	0.48	109				
			277		✓	✓	0.41					
			120	ICN-2S54-90C	✓	✓	0.94	112	0.90	10	0.98	Fig. D/169
			230		✓	✓	0.48	109				
			277		✓	✓	0.41					
			347	HCN-2S54-90C	✓	✓	0.33	112	0.90	10	0.98	Fig. D/169
			480		✓	✓	0.24					
			120	ICN-4S54-90C-2LS	✓	✓	0.93	111	0.89	10	0.97	Fig. E/170
			230		✓	✓	0.49					
			277		✓	✓	0.41					
3	55	0/-18	120	ICN-4S54-90C-2LS	✓	✓	1.41	169	0.90	10	0.98	Fig. E/170
			230		✓	✓	0.73	166				
			277		✓	✓	0.61					
4	55	0/-18	120	ICN-4S54-90C-2LS	✓	✓	1.86	222	0.90	10	0.98	Fig. E/170
			230		✓	✓	0.95	217				
			277		✓	✓	0.80					
FT80W/2G11 - 80W Long Twin Tube Lamp (PL-L80W)												
1	80	0/-18	120	ICN-1S80	✓	✓	0.76	91	1.00	10	0.98	Fig. D/169
			230		✓	✓	0.39	89				
			277		✓	✓	0.33					

Standard Electronic

The family of Advance Standard Electronic ballasts operates the most popular long twin tube lamps on the market - 36W, 40W, 50W and 55W. All are Rapid Start designed, which maximizes lamp life by properly preheating the lamp cathodes and feature an EOL protection circuit, which removes power from the lamp when the ballast senses lamp failure. This standard feature meets proposed ANSI/IEC regulations. The ballast is designed with fully integrated, internally soldered copper leads for a safe, firm, and long-lasting electrical connection.

Applications

- Auditoriums
- Boardrooms
- Conference Rooms
- Department Stores
- Educational Facilities
- Healthcare Facilities
- Hotels
- Houses of Worship
- Private and Executive Offices
- Restaurants
- Specialty Stores

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT36W/2G11 - 36/39W Long Twin Tube Lamp (PL-L36W, F39BX/RS, FT36DL)												
1	36 - 39	50/10	120	REL-1TTS39	✓	✓	0.35	39	1.00	20	0.98	Fig. A/160
			277	VEL-1TTS39	✓	✓	0.15					
2	36 - 39	50/10	120	REL-2TTS39	✓	✓	0.59	70	0.85	20	0.98	Fig. A/160
			277	VEL-2TTS39	✓	✓	0.25					
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L40W, F40BX, FT40DL/RS)												
1	40	50/10	120	REL-1TTS40	✓	✓	0.37	44	1.00	20	0.98	Fig. A/160
			277	VEL-1TTS40	✓	✓	0.16					
2	40	50/10	120	REL-2TTS40	✓	✓	0.60	71	0.85	20	0.98	Fig. A/160
			277	VEL-2TTS40	✓	✓	0.26					
FT50W/2G11/RS - 50W Long Twin Tube Lamp (PL-L50W, F50BX/RS)												
1	50	50/10	120	REL-1TTS50	✓	✓	0.46	54	0.98	20	0.98	Fig. A/160
			277	VEL-1TTS50	✓	✓	0.20					
2	50	50/10	120	REL-2TTS50	✓	✓	0.90	106	0.98	20	0.98	Fig. A/160
			277	VEL-2TTS50	✓	✓	0.39					
FT55W/2G11 - 55W Long Twin Tube Lamp (F55BX, FT55DL)												
1	55	50/10	120	REL-1TTS50	✓	✓	0.43	51	0.85	20	0.98	Fig. A/160
			277	VEL-1TTS50	✓	✓	0.20					
2	55	50/10	120	REL-2TTS50	✓	✓	0.83	100	0.84	20	0.98	Fig. A/160
			277	VEL-2TTS50	✓	✓	0.40					

Mark 10™ *Powerline*

The Advance Mark 10 *Powerline* ballast is the full-range electronic dimming ballast for fluorescent lighting systems. The Mark 10 *Powerline* combines the long life and energy efficiency of fluorescent lamps with the controllability and full-range dimming capabilities of incandescent systems. The Mark 10 *Powerline* requires no additional control wiring, making it an easy-to-install retrofit option.

Applications

- Auditoriums
- Boardrooms
- Conference Rooms
- Department Stores
- Educational Facilities
- Healthcare Facilities
- Hotels
- Houses of Worship
- Private and Executive Offices
- Restaurants
- Specialty Stores

Lamp Data		Min. Starting Temp. (˚F/˚C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
CFQ18W/G24q - 18W CFL Quad Tube Lamp (PL-C18W/4P, F18DBX/4P, CF18DD/E) CFTR18W/GX24q - 18W CFL Triple Tube Lamp (PL-T18W, F18TBX/4P, CF18DT/E)												
1	18	50/10	120	REZ-1Q18-M2-XX①	✓	✓	0.18	22/7	1.00/ 0.05	10	0.98	Size 2/ 168
			277	VEZ-1Q18-M2-XX①	✓	✓	0.07					
2	18	50/10	120	REZ-2Q18-M2-XX①	✓	✓	0.36	43/14	1.00/ 0.05	10	0.98	Size 2/ 168
			277	VEZ-2Q18-M2-XX①	✓	✓	0.16					
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E) CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)												
1	26	50/10	120	REZ-1T42-M2-XX①②	✓	✓	0.26	31/8	1.00/ 0.05	10	0.98	Size 2/ 168
			277	VEZ-1T42-M2- XX①②	✓	✓	0.11					
2	26	50/10	120	REZ-2Q26-M2-XX①②	✓	✓	0.48	58/16	1.00/ 0.05	10	0.98	Size 2/ 168
			277	VEZ-2Q26-M2- XX①②	✓	✓	0.21					
CFTR32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W, F32TBX/4P, CF32DT/E)												
1	32	50/10	120	REZ-1T42-M2- XX①②	✓	✓	0.32	38/9	1.00/ 0.05	10	0.98	Size 2/ 168
			277	VEZ-1T42-M2-XX①②	✓	✓	0.14					
2	32	50/10	120	REZ-2T42-M3-XX①	✓	✓	0.64	76/20	1.00/ 0.05	10	0.98	Size 3/ 168
			277	VEZ-2T42-M3-XX①	✓	✓	0.28					
CFTR42W/GX24q - 42W CFL Triple Tube Lamp (PL-T42W, F42TBX/4P, CF42DT/E)												
1	42	50/10	120	REZ-1T42-M2- XX①②	✓	✓	0.41	49/10	1.00/ 0.05	10	0.99	Size 2/ 168
			277	VEZ-1T42-M2-XX①②	✓	✓	0.18					
2	42	50/10	120	REZ-2T42-M3- XX①	✓	✓	0.82	98/20	1.00/ 0.05	10	0.98	Size 3/ 168
			277	VEZ-2T42-M3-XX①	✓	✓	0.36					
CFTR57W/GX24q - 57W CFL Triple Tube Lamp (F57QBX/4P, CF57DT/E)												
1	57	50/10	120	REZ-2T42-M3- XX①	✓	✓	0.55	66/18	1.00/ 0.05	10	0.98	Size 3/ 168
			277	VEZ-2T42-M3- XX①	✓	✓	0.24					
CFTR70W/GX24q - 70W CFL Triple Tube Lamp (F70QBX/4P, CF70DT/E)												
1	70	50/10	120	REZ-2T42-M3-XX①	✓	✓	0.67	80/18	1.00/ 0.05	10	0.98	Size 3/ 168
			277	VEZ-2T42-M3- XX①	✓	✓	0.29					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.
② Retrofit/replacement kits available in these models, contact factory.

Lamp Data		Min. Starting Temp. (˚F/˚C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT36W/2G11 - 36W Long Twin Tube Lamp (PL-L36W, F39/36BX, FT36DL)												
1	36	50/10	120	REZ-1TTS40-SC	✓	✓	0.32	38/9	1.00/ 0.05	10	0.99	Fig. B/168
			277	VEZ-1TTS40-SC	✓	✓	0.14					
2	36	50/10	120	REZ-2TTS40-SC	✓	✓	0.64	75/16	1.00/ 0.05	10	0.99	Fig. B/168
			277	VEZ-2TTS40-SC	✓	✓	0.27					
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L40W, F40/30BX, FT40DL/RS)												
1	40	50/10	120	REZ-1TTS40*/REZ-1TTS40-SC**	✓	✓	0.34	41/10	1.00/ 0.05	10	0.98	Fig. A**/168
			277	VEZ-1TTS40*/VEZ-1TTS40-SC**	✓	✓	0.15					
2	40	50/10	120	REZ-2TTS40*/REZ-2TTS40-SC**	✓	✓	0.68	80/17	1.00/ 0.05	10	0.98	Fig. A**/168
			277	VEZ-2TTS40*/VEZ-2TTS40-SC**	✓	✓	0.30					
FT55W/2G11 - 55W Long Twin Tube Lamp (F55BX, FT55DL)												
1	55	50/10	120	REZ-154	✓	✓	0.50	59/13	0.90/ 0.05	10	0.98	Fig. D/168
			277	VEZ-154	✓	✓	0.22					
2	55	50/10	120	REZ-2S54	✓	✓	0.96	114/24	0.90/ 0.05	10	0.98	Fig. D/168
			277	VEZ-2S54	✓	✓	0.42					

* To be replaced with - SC 1Q 2004 ** To replace large can units 1Q 2004

Mark 7™ 0-10V

The new line of Mark 7 0-10V ballasts opens a vast new landscape of fluorescent dimming solutions for "sustainable" or "green" building design, a concept defined as the degree to which a structure's site planning, building materials, working environment, and building management systems minimize the building's impact on the environment. As they dim lamps directly from a variety of compatible 0-10V controls and are ideal for use with the most sophisticated total building management systems, Advance's Mark 7 0-10V ballasts fully support sustainability as measured by the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ performance standards.

Innovative features, packed into smaller ballast housings, make lighting systems more dynamic, fixture options more flexible, and energy savings more powerful.

Applications

- Auditoriums
- Boardrooms
- Conference Rooms
- Department Stores
- Educational Facilities
- Healthcare Facilities
- Hotels
- Houses of Worship
- Private and Executive Offices
- Restaurants
- Specialty Stores
- Training Areas

SUSTAINABLE CONTROLLABLE FLEXIBLE

Powered by ADVANCE® Program Eligible

Lamp Data Number	Lamp Data Watts	Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications UL	Certifications CSA	Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E) CFTR13W/GX24q - 13W CFL Triple Tube Lamp (F13TBX/4P, CF13DT/E)												
1	13	50/10	120	IZT-2S26-M5-XX①	✓	✓	0.14	18/6	1.00/ 0.03	10	0.99	Size 5/ 166
			277		✓	✓	0.07					
2	13	50/10	120	IZT-2S26-M5-XX①	✓	✓	0.26	32/9	1.00/ 0.03	10	0.99	Size 5/ 166
			277		✓	✓	0.12					
CFQ18W/G24q - 18W CFL Quad Tube Lamp (PL-C18W/4P, F18DBX/4P, CF18DD/E) CFTR18W/GX24q - 18W CFL Triple Tube Lamp (PL-T18W, F18TBX/4P, CF18DT/E)												
1	18	50/10	120	IZT-2S26-M5-XX①	✓	✓	0.15	20/7	1.00/ 0.03	10	0.99	Size 5/ 166
			277		✓	✓	0.08					
2	18	50/10	120	IZT-2S26-M5-XX①	✓	✓	0.32	41/11	1.00/ 0.03	10	0.99	Size 5/ 166
			277		✓	✓	0.15					
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E) CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)												
1	26	50/10	120	IZT-1T42-M2-XX①*/ IZT-2S26-M5-XX①**	✓	✓	0.22	28/8	1.00/ 0.05(0.03)	10	0.99	Size 2(5) 166
			277		✓	✓	0.10					
2	26	50/10	120	IZT-2Q26-M2-XX①*/ IZT-2S26-M5-XX①**	✓	✓	0.41	49/13	1.00/ 0.05(0.03)	10	0.99	Size 2(5) 166
			277		✓	✓	0.18					
CFTR32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W, F32TBX/4P, CF32DT/E)												
1	32	50/10	120	IZT-1T42-M2-XX①*/ IZT-2S26-M5-XX①**	✓	✓	0.28	34/9	1.00/ 0.05(0.03)	10	0.99	Size 2(5) 166
			277		✓	✓	0.13					
2	32	50/10	120	IZT-2T42-M3-XX①*/ IZT-2T42-M5-XX①**	✓	✓	0.63	75/19	1.00/ 0.05(0.03)	10	0.99	Size 3(5) 166
			277		✓	✓	0.21					
CFTR42W/GX24q - 42W CFL Triple Tube Lamp (PL-T42W, F42TBX/4P, CF42DT/E)												
1	42	50/10	120	IZT-1T42-M2-XX①*/ IZT-2S26-M5-XX①**	✓	✓	0.38	46/9	1.00/ 0.05(0.03)	10	0.99	Size 2(5) 166
			277		✓	✓	0.17					
2	42	50/10	120	IZT-2T42-M3-XX①*/ IZT-2T42-M5-XX①**	✓	✓	0.82	98/18	1.00/ 0.05(0.03)	10	0.99	Size 3(5) 166
			277		✓	✓	0.36					
CFTR57W/GX24q - 57W CFL Triple Tube Lamp (F57QBX/4P, CF57DT/E)												
1	57	50/10	120	IZT-2T42-M3-XX①*/ IZT-2T42-M5-XX①**	✓	✓	0.55	65/16	1.00/ 0.05(0.03)	10	0.98	Size 3(5) 166
			277		✓	✓	0.24					
CFTR70W/GX24q - 70W CFL Triple Tube Lamp (F70QBX/4P, CF70DT/E)												
1	70	50/10	120	IZT-2T42-M3-XX①*/ IZT-2T42-M5-XX①**	✓	✓	0.63	75/16	1.00/ 0.05(0.03)	10	0.99	Size 3(5) 166
			277		✓	✓	0.27					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.
* To be replaced with Size 5 ** To replace Size 2 and Size 3

FT36W/2G11 - 36W Long Twin Tube Lamp (PL-L36W, F39/36BX, FT36DL)												
1	36	50/10	120	IZT-1TTS40-SC	✓	✓	0.32	38/9	1.00/ 0.03	10	0.99	Fig. A/166
			277	IZT-1TTS40-SC	✓	✓	0.14					
2	36	50/10	120	IZT-2TTS40-SC	✓	✓	0.64	75/16	1.00/ 0.03	10	0.99	Fig. A/166
			277	IZT-2TTS40-SC	✓	✓	0.27					
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L40W, F40/30BX, FT40DL)												
1	40	50/10	120	RZT-1TTS40* / IZT-1TTS40-SC**	✓	✓	0.32	38/11	1.00/ 0.05(0.03)	10	0.99	Fig. A(B) 166
			277	VZT-1TTS40* / IZT-1TTS40-SC**	✓	✓	0.14					
2	40	50/10	120	RZT-2TTS40* / IZT-2TTS40-SC**	✓	✓	0.64	76/16	1.00/ 0.05(0.03)	10	0.99	Fig. A(B) 166
			277	VZT-2TTS40* / IZT-2TTS40-SC**	✓	✓	0.28					
FT55W/2G11 - 55W Long Twin Tube Lamp (F55BX, FT55DL)												
1	55	50/10	120	RZT-154	✓	✓	0.50	59/13	0.90/ 0.03	10	0.98	Fig. D/166
			277	VZT-154	✓	✓	0.22					
2	55	50/10	120	RZT-2S54	✓	✓	0.96	114/24	0.90/ 0.03	10	0.98	Fig. D/166
			277	VZT-2S54	✓	✓	0.42					
FT80W/2G11 - 80W Long Twin Tube Lamp (PL-L80W, FT80DL)												
1	80	50/10	277	VZT-180	✓	✓	0.34	94/16	1.00/ 0.03	10	0.99	Fig. D/166

* To be replaced with -SC 1Q 2004 ** To replace large can units 1Q 2004

ROVR™

Now you can easily adopt the Digital Addressable Lighting Interface (DALI) protocol for digitally addressable lighting interfaces. ROVR, the new digitally addressable ballast from Advance, lets you set up any fluorescent lighting system configuration you desire, with such discrete dimming performance settings as up and down, on and off, fade rates, and more.

Roll Your Lighting Designs Over as Building Spaces Change

The ROVR ballasts let you program - then change - any lighting scene or configuration, to easily accommodate any moves, adds, or changes in your lighting design.

- Satisfy future tenant needs
- Customize lighting to exact space
- Enable unrestricted lighting designs
- Change designs without ballast or fixture rewiring

Supports sustainability

ROVR ballasts play a critical role within "sustainable" or "green" building design, a concept defined as the degree to which a structure's site planning, building materials, working environment, and building management systems minimize the building's impact on the environment. Through their ability to help facility professionals track, archive, and evaluate the on-going performance of their lighting system with precision as well as conserve energy through such popular strategies as daylight harvesting and load shedding, Advance's ROVR ballasts fully support sustainability as measured by the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ performance standards.

Train Your Lighting to Protect Your Investments

With the new ROVR ballasts, you can now track, archive, and evaluate your lighting investments. ROVR reports ballast and lamp status, system faults, and performance failures.

- 100% to 3% dimming capability
- Precise regulation of lighting
- Archive and report energy savings
- Interface with Building Management Systems (BMS)

Applications

- Auditoriums
- Boardrooms
- Conference Rooms
- Department St
- Educational Fa
- Healthcare Fac
- Hotels
- Houses of Wor
- Private and Ex
- Restaurants
- Specialty Store

FLEXIBLE SUSTAINABLE CONTROLLABLE

Lamp Data		Min. Starting Temp. (¡F/¡C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E) CFTR13W/GX24q - 13W CFL Triple Tube Lamp (F13TBX/4P, CF13DT/E)												
1	13	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.14	18/6	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.07					
2	13	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.26	32/9	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.12					
CFQ18W/G24q - 18W CFL Quad Tube Lamp (PL-C18W/4P, F18DBX/4P, CF18DD/E) CFTR18W/GX24q - 18W CFL Triple Tube Lamp (PL-T18W, F18TBX/4P, CF18DT/E)												
1	18	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.15	20/7	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.08					
2	18	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.32	41/11	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.15					
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E) CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)												
1	26	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.22	28/8	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.10					
2	26	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.41	49/13	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.18					
CFTR32W/GX24q - 32W CFL Triple Tube Lamp (PL-T32W, F32TBX/4P, CF32DT/E)												
1	32	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.28	34/9	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.13					
2	32	50/10	120	IDL-2T42-M5-XX①	✓	✓	0.63	75/19	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.21					
CFTR42W/GX24q - 42W CFL Triple Tube Lamp (PL-T42W, F42TBX/4P, CF42DT/E)												
1	42	50/10	120	IDL-2S26-M5-XX①	✓	✓	0.38	46/9	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.17					
2	42	50/10	120	IDL-2T42-M5-XX①	✓	✓	0.82	98/18	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.36					
CFTR57W/GX24q - 57W CFL Triple Tube Lamp (F57QBX/4P, CF57DT/E)												
1	57	50/10	120	IDL-2T42-M5-XX①	✓	✓	0.55	65/16	1.00/ 0.03	10	0.98	Size 5/ 165
			277		✓	✓	0.24					
CFTR70W/GX24q - 70W CFL Triple Tube Lamp (F70QBX/4P, CF70DT/E)												
1	70	50/10	120	IDL-2T42-M5-XX①	✓	✓	0.63	75/16	1.00/ 0.03	10	0.99	Size 5/ 165
			277		✓	✓	0.27					

① See page 26-27 for correct case, mounting selection, dimensions, and wiring diagrams.

Lamp Data		Min. Starting Temp. (¡F/¡C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts) max/min	Ballast Factor max/min	Max. THD % (at full light output)	Min. Power Factor	Dim./ Wiring Diagram
Number	Watts				UL	CSA						
FT36W/2G11/RS - 36W Long Twin Tube Lamp (PL-L36W, F39/36BX, FT36DL)												
1	36	50/10	120	IDA-1TTS40-SC ✪	✓	✓	0.32	38/9	1.00/ 0.03	10	0.99	Fig. B/165
			277		✓	✓	0.14					
2	36	50/10	120	IDA-2TTS40-SC ✪	✓	✓	0.64	75/16	1.00/ 0.03	10	0.99	Fig. B/165
			277		✓	✓	0.27					
FT40W/2G11/RS - 40W Long Twin Tube Lamp (PL-L40W, F40/30BX, FT40DL)												
1	40	50/10	120	IDA-1TTS40-SC ✪	✓	✓	0.32	38/11	1.00/ 0.03	10	0.99	Fig. B/165
			277		✓	✓	0.14					
2	40	50/10	120	IDA-2TTS40-SC ✪	✓	✓	0.64	76/16	1.00/ 0.03	10	0.99	Fig. B/165
			277		✓	✓	0.28					
FT55W/2G11 - 55W Long Twin Tube Lamp (F55BX, FT55DL)												
1	55	50/10	120	IDA-154 ✪	✓	✓	0.50	59/13	0.90/ 0.03	10	0.98	Fig. D/165
			277		✓	✓	0.22					
2	55	50/10	120	IDA-2S54	✓	✓	0.96	114/24	0.90/ 0.03	10	0.98	Fig. D/165
			277		✓	✓	0.42					

✪ To be available June 2004

E-STAR™ Series

Matchbox™

Advance has developed the 120V Matchbox™ electronic ballast family for 4-Pin compact fluorescent (7-26W) lamps. The Matchbox Family of electronic ballasts is derived from the circuit technology currently being applied in compact fluorescent integrated lamps. Matchbox features color-coded poke-in connectors. This ballast provides up to 25% energy savings compared with equivalent electromagnetic ballasts and up to 75% energy savings over incandescent systems.

Applications

- Undercabinet fluorescent lighting
- Task lighting (desk lamps)
- Ambience lighting (living rooms, bedrooms, kitchens)
- Orientation lighting (halls, staircases)
- Sign lighting (point of sale, shelf lighting)

SmartMate "QSE" ™

To meet the demand for shorter lamp ignition time, Advance has developed SmartMate models featuring Quik-Start technology.

This new technology ignites 13, 26 or 32 watt CFL lamps in less than 1 second, vs. the standard 1.25 to 1.50 seconds for programmed-start circuits.

It should be noted that SmartMate with "Quik-Start" (minimum 15,000 on/off cycles at 30 sec. on/30 sec. off) is not recommended for applications having frequent switching or with occupancy sensors. For these applications, the standard SmartMate CFL ballasts (programmed start, minimum 50,000 on/off cycles) will deliver optimal lamp life. (see pg. 11 for more details)

Applications

- Hotel Rooms (bathrooms, foyers)
- Residential (kitchens, living areas)

Ask About ENERGY STAR

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim.	Wiring Diagram
Number	Watts				UL	CSA							
CFT7W/2G7 - 7W CFL Twin Tube Lamp (CF7DS/E)													
1	7	0/-18	120	RMB-1P13-L2[1]	✓	✓	0.13	8	1.00	150	0.51	L2	160
				RMB-1P13-S1[1]								S1	
2	7	0/-18	120	RMB-2P13-L2[1]	✓	✓	0.24	16	1.10	150	0.56	L2	160
				RMB-2P13-S2[1]								S2	
CFT9W/2G7 - 9W CFL Twin Tube Lamp (CF9DS/E)													
1	9	0/-18	120	RMB-1P13-L2[1]	✓	✓	0.16	10	1.10	150	0.52	L2	160
				RMB-1P13-S1[1]								S1	
2	9	0/-18	120	RMB-2P13-L2[1]	✓	✓	0.29	20	1.10	125	0.57	L2	160
				RMB-2P13-S2[1]								S2	

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Power Factor	Dim.	Wiring Diagram
Number	Watts				UL	CSA							
CFQ13W/G24q - 13W CFL Quad Tube Lamp (PL-C13W/4P, F13DBX/4P, CF13DD/E) CFTR13W/GX24q - 13W CFL Triple Tube Lamp (F13TBX/4P, CF13DT/E)													
1	13	0/-18	120	RMB-1P13-L2[1]	✓	✓	0.20	14	1.00	150	0.58	L2	160
				RMB-1P13-S1[1]								S1	
2	13	0/-18	120	RMB-2P13-L2[1]	✓	✓	0.35	25	0.95	125	0.60	L2	160
				RMB-2P13-S2[1]								S2	
CFQ18W/G24q - 18W CFL Quad Tube Lamp (PL-C18W/4P, F18DBX/4P, CF18DD/E) CFTR18W/GX24q - 18W CFL Triple Tube Lamp (PL-T18W, F18TBX/4P, CF18DT/E)													
1	18	0/-18	120	RMB-2P13-L2[1]	✓	✓	0.26	16	0.80	150	0.51	L2	160
				RMB-2P13-S2[1]								S2	
CFQ26W/G24q - 26W CFL Quad Tube Lamp (PL-C26W/4P, F26DBX/4P, CF26DD/E) CFTR26W/GX24q - 26W CFL Triple Tube Lamp (PL-T26W, F26TBX/4P, CF26DT/E)													
1	26	0/-18	120	RMB-1P26-S2[1]	✓	✓	0.38	26	0.95	125	0.57	S2	160

Lamp Data		Min. Starting Temp. (°F/°C)	Input Volts	Catalog Number	Certifications		Line Current (Amps)	Input Power ANSI (Watts)	Ballast Factor	Max. THD %	Min. Power Factor	Dim.	Wiring Diagram
Number	Watts				UL	CSA							
FC9T5 (22w Circline)													
1	22	0/-18	120	RMB-1P26-S2[1]	✓	✓	0.39	25	1.00	150	0.53	S2	160
FC8T9 (22w Circline)													
1	22	0/-18	120	RMB-1P26-S2[1]	✓	✓	0.35	22	0.95	150	0.52	S2	160
FT18/2G11/RS - 18W Long Twin Tube Lamp (F18BX/RS, FT18DL/RS)													
1	18	0/-18	120	RMB-1P26-S2[1]	✓	✓	0.37	23	1.00	150	0.52	S2	160
FT24/2G11 - 24/27W Long Twin Tube Lamp (PL-L24W, F27BX/RS, FT27DL)													
1	24-27	0/-18	120	RMB-1P26-S2[1]	✓	✓	0.40	26	0.95	150	0.54	S2	160

For SmartMate QSE lamp table, please see page 11.

SmartMate® / Matchbox Ballast Specifications

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast shall be available in a plastic/metal can or all metal can construction to meet all plenum requirements. (SmartMate)

1.3 Ballast shall be provided with poke-in wire trap connectors color coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be Programmed Start except for ballasts with -QS suffix which shall be Rapid Start.

2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.3 Ballast shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the IntelliVolt ballast. RCF/RMB models shall operate from 60 Hz input source of 120V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency above 65 kHz (SmartMate) or 42KHz (Matchbox) to avoid interference with infrared devices and eliminate visible flicker.

2.5 Ballast shall have a Power Factor greater than 0.98 (SmartMate) or 0.50 (Matchbox) for primary lamp.

2.6 Ballast shall have a minimum ballast factor of 1.00 for primary lamp application. (SmartMate)

2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp. (SmartMate)

2.9 Ballast shall have a Class A sound rating .

2.10 Ballast shall have a minimum starting temperature of -18°C (0°F) for primary lamp. Ballasts for PL-H lamps shall have a minimum starting temperature of -30°C (-20°F) for primary lamp.

2.11 Ballast shall provide Lamp EOL Protection Circuit.

2.12 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section II - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwrites Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified, where applicable.

3.3 Ballast shall be Underwrites (UL) rated for use in air-handling spaces. (SmartMate)

3.4 Ballast shall comply with ANSI C62.41, Category A for Transient protection.

3.5 Ballast shall comply with ANSI C82.11, where applicable.

3.6 Ballast shall comply with requirements of the Federal Communictions Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-consumer (Class A) for EMI/RFI (conducted and radiated) except for RCF and RMB models, which shall be Consumer (Class B).

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 75°C and three-years for a maximum case temerpature of 85°C (90°C for PL-H lamps). (SmartMate)

Ballast shall carry a two-year warranty from date of manufacture against defects in materal or workmanship, including replacement, for operation at a maximum case temperature of 65°C. (Matchbox)

4.3 Manufacturer shall have a fifteen year history of producing electronic ballasts for the North American market.

4.4 Ballast shall be Advance Transformer part # _____ or approved equal.

Centium® Ballast Specifications

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast for Programmed Start operation shall be provided with poke-in wire trap connectors or integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be Instant Start for dedicated voltage models and Programmed Start for IntelliVolt models.

2.2 Ballast for Instant Start operation shall provide Independent Lamp Operation (ILO) allowing remaining lamp(s) to maintain full light output when one or more lamp fail.

2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.4 Ballast shall operate from 60 Hz input source of 120V, 277V or 347V as applicable with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast. IntelliVolt models shall operate from 50/60 Hz input source of 120V through 277V or 347V through 480V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.

2.6 Ballast shall have a Power Factor greater than 0.98 for primary lamp.

2.7 Ballast shall have a minimum ballast factor of 0.85 for primary lamp application.

2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at nominal line voltage with primary lamp.

2.10 Ballast shall have a Class A sound rating .

2.11 Ballast shall have a minimum starting temperature of -18°C (0°F) for primary lamp.

2.12 Ballast for Programmed Start operation shall provide Lamp EOL Protection Circuit.

2.13 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

2.14 Ballast shall have a hi-low switching option when operating (4) FT55 lamps to allow switching from 4-2 lamps, 3-2 lamps or 3-1 lamps.

Section III - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwrites Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified, where applicable.

3.3 Ballast shall comply with ANSI C62.41, Category A for Transient protection.

3.4 Ballast shall comply with ANSI C82.11, where applicable.

3.5 Ballast shall comply with requirements of the Federal Communictions Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-consumer (Class A) for EMI/RFI (conducted and radiated) except for RCF and RMB models, which shall be Consumer (Class B).

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70°C. Ballasts with a 90°C designation in their catalog number shall also carry a three-year warranty at maximum case temperature of 90°C.

4.3 Manufacturer shall have a fifteen year history of producing electronic ballasts for the North American market.

4.4 Ballast shall be Advance Transformer part # _____ or approved equal.

Standard Ballast Specifications

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast shall be provided with integral leads color coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be Rapid Start.

2.2 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.3 Ballast shall operate from 60 Hz input source of 120V, 277V as applicable with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.4 Ballast shall be high frequency electronic type and operate lamps at a frequency between 20 kHz and 30 kHz to avoid interference with infrared devices and eliminate visible flicker.

2.5 Ballast shall have a Power Factor greater than 0.98 for primary lamp.

2.6 Ballast shall have a minimum ballast factor of 0.84 for primary lamp application.

2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.8 Ballast input current shall have Total Harmonic Distortion (THD) of less than 20% when operated at nominal line voltage with primary lamp.

2.9 Ballast shall have a Class A sound rating .

2.10 Ballast shall have a minimum starting temperature of 10°C (50°F) for primary lamp.

2.11 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section III - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwrites Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified, where applicable.

3.3 Ballast shall comply with ANSI C62.41, Category A for Transient protection.

3.4 Ballast shall comply with ANSI C82.11, where applicable.

3.5 Ballast shall comply with requirements of the Federal Communictions Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-consumer (Class A) for EMI/RFI (conducted and radiated).

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.

4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70°C.

4.3 Manufacturer shall have a fifteen year history of producing electronic ballasts for the North American market.

4.4 Ballast shall be Advance Transformer part # _____ or approved equal.

Dimming Ballast Specifications

Section I - Physical Characteristics

1.1 Ballast shall be physically interchangeable with standard electromagnetic or standard electronic ballasts, where applicable.

1.2 Ballast shall be available in metal can construction to meet all plenum requirements.

1.3 Ballast shall be provided with poke-in wire trap connectors color coded per ANSI C82.11.

Section II - Performance Requirements

2.1 Ballast shall be Programmed Start.

2.2 Ballast utilizing low voltage control leads shall be provided with integral protection circuitry to withstand connection of low voltage control leads to mains power supply. In the event, ballast shall default to maximum light output.

2.3 Ballast shall contain auto restart circuitry in order to restart lamps without resetting power.

2.4 Ballast for Mark 10 Powerline shall operate from 60 Hz input source of 120V or 277V as applicable with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast. IntelliVolt models shall operate from 50/60 Hz input source of 120V through 277V with sustained variations of +/- 10% (voltage and frequency) with no damage to the ballast.

2.5 Ballast shall be high frequency electronic type and operate lamps at a frequency above 42 kHz to avoid interference with infrared devices and eliminate visible flicker.

2.6 Ballast shall have a Power Factor greater than 0.98 at ful light output and greater than 0.90 throughout the dimming range for primary lamp.

2.7 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.05 (0.03 for IntelliVolt models) at minimum light output for primary lamp.

2.8 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less in accordance with lamp manufacturer recommendations.

2.9 Ballast input current shall have Total Harmonic Distortion (THD) of less than 10% at maximum light output when operated at nominal line voltage with primary lamp. For powerline control models, Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.

2.10 Ballast shall have a Class A sound rating .

2.11 Ballast shall have a minimum starting temperature of 10°C (50°F) for primary lamp.

2.12 Ballast shall provide Lamp EOL Protection Circuit.

2.13 Ballast shall control lamp light output from 100% - 5% (3% for IntelliVolt models) relative light output.

2.14 Ballast shall ignite the lamps at any light output setting without first going to another output setting.

2.15 Ballast shall tolerate sustained open circuit and short circuit output conditions without damage.

Section II - Regulatory Requirements

3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).

3.2 Ballast shall be Underwrites Laboratories (UL) listed, Class P and Type 1 Outdoor; and Canadian Standards Association (CSA) certified, where applicable.

3.3 Ballast shall comply with ANSI C62.41, Category A for Transient protection.

3.4 Ballast shall comply with ANSI C82.11, where applicable.

3.5 Ballast shall comply with requirements of the Federal Communictions Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-consumer (Class A) for EMI/RFI (conducted and radiated).

Section IV - Other

4.1 Ballast shall be manufactured in a factory certified to ISO 9002 Quality System Standards.

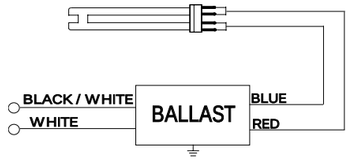
4.2 Ballast shall carry a five-year warranty from date of manufacture against defects in material or workmanship, including replacement, for operation at a maximum case temperature of 70°C.

4.3 Manufacturer shall have a fifteen year history of producing electronic ballasts for the North American market.

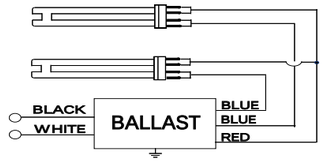
4.4 Ballast shall be Advance Transformer part # _____ or approved equal.

Wiring Diagrams

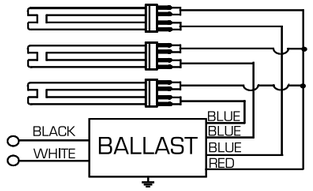
Diag. 70



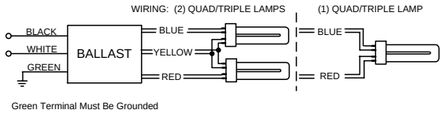
Diag. 71



Diag. 72

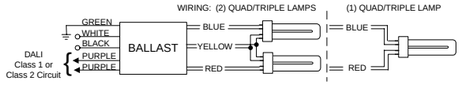


Diag. 160



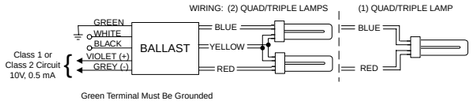
Green Terminal Must Be Grounded

Diag. 165



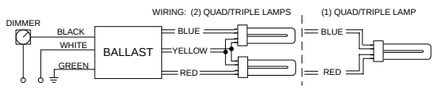
Green Terminal Must Be Grounded

Diag. 166



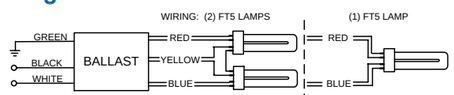
Green Terminal Must Be Grounded

Diag. 168



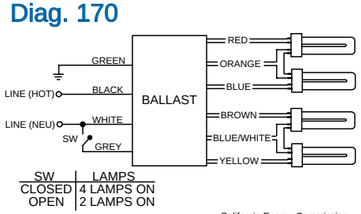
Green Terminal Must Be Grounded

Diag. 169



Green Terminal Must Be Grounded

Diag. 170



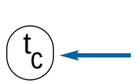
Green Terminal Must Be Grounded

California Energy Commission (CEC) Title 24 compatible

Remote / Tandem Wiring Notes:

Standard, Mark 7, Mark 10, ROVR:	No Remote or Tandem wiring allowed.
Centium, Matchbox:	Remote or Tandem wiring allowed to a maximum of 20 feet between ballast and lamp holder. For Tandem wiring, any lamp can be remote mounted.
SmartMate, SmartMate QSE:	Remote or Tandem wiring allowed to a maximum of 6 feet for 2-lamp or 15 feet for 1-lamp between ballast and lamp holder. For Tandem wiring, only RED lamp can be remoted. BLUE lamp must be in same fixture as ballast.

Hot Spot Measurement



Hot Spot Look for this symbol on the label to determine the hot spot within the ballast

Ballast Dimensions

Fig. A

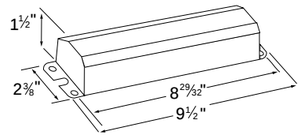


Fig. B

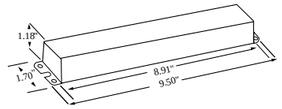
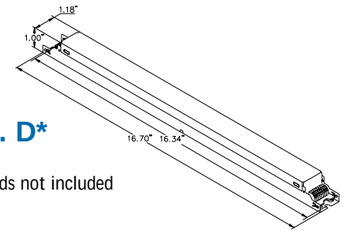
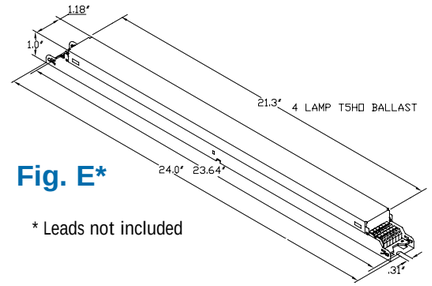


Fig. D*



* Leads not included

Fig. E*

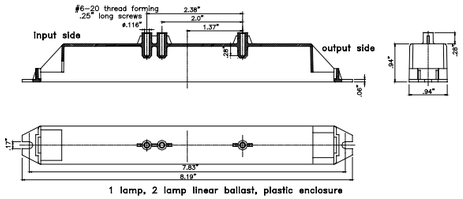


* Leads not included

-L2 Model

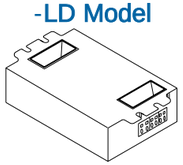
Quad/Triple Ballast Enclosure Dimensions					
Mounting Options	Length (in.)	Width (in.)	Height (in.)	Mounting Length (in.)	Size
H1-LD	4.20	2.40	0.98	4.60	1
M1-LS	4.20	2.40	0.98	4.60	1
M1-BS	4.20	2.40	0.98	2.00	1
M2-LD	4.20	3.00	1.29	4.60	2
M2-LS	4.20	3.00	1.29	4.60	2
M2-BS	4.20	3.00	1.29	2.00	2
M3-BS	5.50	3.00	1.29	6.00	3
M3-LD*	5.50	3.00	1.29	6.00	3
M4-LD	7.00	3.00	1.29	7.50	4
M4-BS	7.00	3.00	1.29	2.00	4
M5-LD	4.20	3.00	1.18	4.60	5
M5-BS	4.20	3.00	1.18	2.00	5

* Dual Entry for Input Leads Only

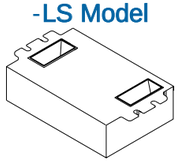


1 lamp, 2 lamp linear ballast, plastic enclosure

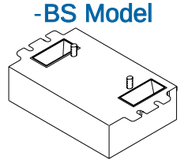
-LD Model



-LS Model



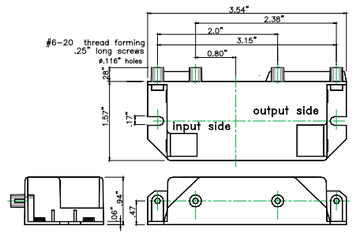
-BS Model



BALLAST MOUNTING OPTIONS														
	ICF-2S13-XX-XX	ICF-2S18-XX-XX	ICF-2S26-XX-XX	ICF-2S42-XX-XX	ICF-1H120 XX-XX	R/VEZ-1T42 XX-XX	R/VEZ-2Q26 XX-XX	R/VEZ-2T42 XX-XX	IZT-2S26-XX-XX	IZT-2T42-XX-XX	IZT-1T42-XX-XX	IZT-2Q26-XX-XX	IDL-2S26-XX-XX	ICF-2T42-XX-XX
H1-LD	✓	✓	✓											
M1-LS	✓	✓	✓											
M1-BS	✓	✓	✓											
M2-LD				✓		✓	✓				✓**	✓**		
M2-LS				✓							✓**	✓**		
M2-BS				✓		✓	✓							
M3-LD								✓		✓*				
M3-BS								✓		✓*				
M4-LD					✓									
M4-BS					✓									
M5-LD									✓	✓			✓	✓
M5-BS									✓	✓			✓	✓

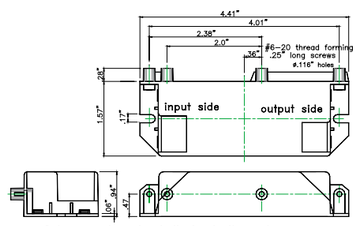
* To be replaced with M5 housing
** To be replaced with IZT-2S26-XX-XX Q1

-S1 Model



1 lamp rectangular ballast, plastic enclosure

-S2 Model



2 lamp rectangular ballast, plastic enclosure