

# As easy as 1,2,3...



## MARK 10 POWERLINE DIMMABLE BALLASTS FOR T5 AND T5HO LAMPS

RoHS<sup>‡</sup>  
COMPLIANT



Listed 704G

**Philips Advance Mark 10 Powerline Dimmable Ballasts** make converting your existing fixtures easy. For companies looking to make their fixed-output linear T5 and T5HO fluorescent systems more cost effective and sustainable, Mark 10 Powerline ballasts provide an easy solution without the need for additional control leads. Simply replace the ballast, replace the switch and dim the lights.

### Features

- Full range continuous dimming (100% light output down to 5% – 1% for T5HO)
- IntelliVolt technology (120 - 277V, 50/60Hz) (28W T5 and 24W T5HO models)

### Benefits

- Compatible with controls from numerous manufacturers using standard *Powerline* controls
- Ideal for frequent switching applications such as occupancy sensors and daylight harvesting – programmed start operation

### Applications

- Ideal for conference rooms, auditoriums, educational facilities, hotels, restaurants, and department stores as well as other new construction or retrofit installations where dimming is desired.

(<sup>‡</sup> See page 2 for footnote)

**PHILIPS**  
**ADVANCE**

# MARK 10 POWERLINE DIMMABLE BALLASTS FOR T5 AND T5HO LAMPS

## Mark 10 Powerline Ballasts For 14 - 28W T5 Lamps

Programmed Start

No. of Lamps	Input Volts	Catalog Number	Max/Min		Full Light Output		Minimum Starting Temp (°F/°C)	Dim.	Wiring Diagram
			Input Power ANSI (Watts)	Ballast Factor	THD %	Line Current (Amps)			
<b>F14T5 (14W)</b>									
1	120-277	IEZ-128-D	17/6	1.03/0.03	15	0.14-0.06	50/10	D	152
2	120-277	IEZ-2S28-D	32/9	1.03/0.03	10	0.27-0.12	50/10	D	153
<b>F21T5 (21W)</b>									
1	120-277	IEZ-128-D	24/6	1.00/0.03	10	0.21-0.08	50/10	D	152
2	120-277	IEZ-2S28-D	48/9	1.00/0.03	10	0.38-0.16	50/10	D	153
<b>F25T5 (28W/ES)</b>									
1	120-277	IEZ-128-D	29/6	1.00/0.03	10	0.25-0.10	60/16	D	152
2	120-277	IEZ-2S28-D	59/10	1.00/0.03	10	0.49-0.20	60/16	D	153
<b>F28T5 (28W)</b>									
1	120-277	IEZ-128-D	31/6	1.00/0.03	10	0.26-0.11	50/10	D	152
2	120-277	IEZ-2S28-D	63/10	1.00/0.03	10	0.53/0.22	50/10	D	153

Ballasts utilizing poke-in connectors can accept wire gauges from AWG 16 - 20.

Some lamp manufacturers recommend burning in new lamps 100 hours at full light output prior to dimming. Consult lamp manufacturer.

## Mark 10 Powerline Ballasts For 24 - 54W T5/HO Lamps

Programmed Start

No. of Lamps	Input Volts	Catalog Number	Max/Min		Full Light Output		Minimum Starting Temp (°F/°C)	Dim.	Wiring Diagram
			Input Power ANSI (Watts)	Ballast Factor	THD %	Line Current (Amps)			
<b>F24T5/HO (24W)</b>									
1	120-277	IEZ-124-D	25/8	1.00/0.03	10	0.21-0.09	50/10	D	152
2	120-277	IEZ-2S24-D	53/11	1.00/0.03	10	0.44-0.18	50/10	D	153
<b>F39T5/HO (39W)</b>									
1	120-277	IEZ-124-D	40/8	0.92/0.03	10	0.34-0.14	50/10	D	152
2	120-277	IEZ-2S24-D	84/11	0.85/0.03	10	0.70-0.29	50/10	D	153
<b>F54T5/HO/ES (49W)</b>									
1	120	REZ-154	59/13	1.00/0.03	10	0.49	50/10	D	152
1	277	VEZ-154	59/13	1.00/0.03	10	0.21	50/10	D	153
2	120	REZ-2S54	117/24	1.00/0.03	10	0.98	50/10	D	152
2	277	VEZ-2S54	117/24	1.00/0.03	10	0.42	50/10	D	153
<b>F54T5/HO (54W)</b>									
1	120	REZ-154	63/13	1.00/0.03	10	0.53	50/10	D	152
1	277	VEZ-154	63/13	1.00/0.03	10	0.23	50/10	D	153
2	120	REZ-2S54	125/24	1.00/0.03	10	1.05	50/10	D	152
2	277	VEZ-2S54	125/24	1.00/0.03	10	0.45	50/10	D	153
<b>FC12T5/HO (55W)</b>									
1	120	REZ-154	59/13	0.90/0.03	10	0.50	50/10	D	152
1	277	VEZ-154	59/13	0.90/0.03	10	0.22	50/10	D	153
2	120	REZ-2S54	114/24	0.90/0.03	10	0.96	50/10	D	152
2	277	VEZ-2S54	114/24	0.90/0.03	10	0.42	50/10	D	153

Ballasts utilizing poke-in connectors can accept wire gauges from AWG 16 - 20.

Some lamp manufacturers recommend burning in new lamps 100 hours at full light output prior to dimming. Consult lamp manufacturer.

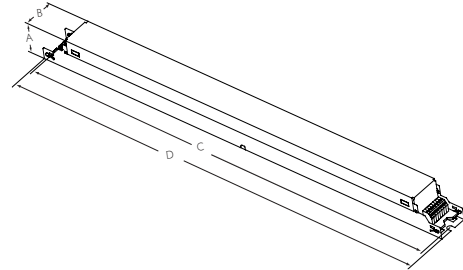
‡ Restrictions on Hazardous Substances (RoHS) is a European directive (2002/95/EC) designed to limit the content of 6 substances [lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE)] in electrical and electronic products. For products used in North America compliance to RoHS is voluntary and self-certified.

# MARK 10 POWERLINE DIMMABLE BALLASTS FOR T5 AND T5HO LAMPS

## Dimensions

Figure	A	B	C	D
D	1.00"	1.18"	16.34"	16.70"

Figure D - Includes connectors with no leads



## Wiring Diagrams

Diagram 152

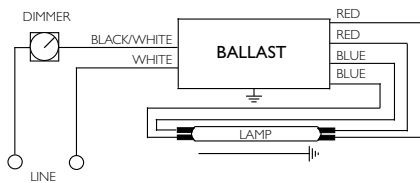
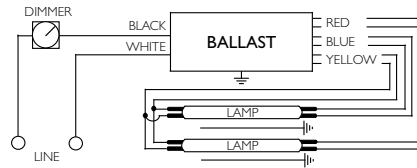


Diagram 153



# MARK 10 POWERLINE DIMMABLE BALLASTS FOR T5 AND T5HO LAMPS

## Ballast Specification

### 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.
- 1.3 Ballast 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 Programmed 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 or 277V or 120V through 277V as applicable with sustained variations of +/- 10% (voltage and frequency).
- 2.4 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.
- 2.5 Ballast shall have a Power Factor greater than 0.98 at full light output.
- 2.6 Ballast shall have a minimum ballast factor of 1.00 at maximum light output and 0.05 at minimum light output for primary lamp application.
- 2.7 Ballast shall provide for a Lamp Current Crest Factor of 1.7 or less.
- 2.8 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. Total Harmonic Current (THC) at minimum light output shall not exceed THC at maximum light output.
- 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 provide Lamp EOL Protection Circuit for T5 and T5/HO lamps.
- 2.12 Ballast shall control lamp light output from 100% - 5% relative light output, 1% for T5/HO.
- 2.13 Ballast shall ignite the lamps at any light output setting without first going to another output setting.
- 2.14 Ballast shall tolerate sustained open circuit and short circuit output conditions.

### Section III - Regulatory Requirements

- 3.1 Ballast shall not contain any Polychlorinated Biphenyl (PCB).
- 3.2 Ballast shall be Underwriters Laboratories (UL) listed, Class P and Type I 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 the requirements of the Federal Communications Commission (FCC) rules and regulations, Title 47 CFR part 18, Non-Consumer (Class A) for EMI/RFI (conducted and radiated).
- 3.6 Ballast shall comply with NEMA 410 for in-rush current limits.

### Section IV - Other

- 4.1 Ballast shall be manufactured in a factory certified to ISO 9001 Quality System Standards.
- 4.2 Ballast shall carry a five-year limited warranty from date of manufacture against defects in material or workmanship for operation at a maximum case temperature of 70°C.
- 4.3 Manufacturer shall have a twenty-year history of producing electronic ballasts for the North American market.
- 4.4 Ballast shall be controlled by a compatible Mark 10 Powerline two-wire dimmer. When input voltage to dimmer is 120V, control voltage at the ballast (from the dimmer) shall be 120V at full light output and 56V at minimum light output. When input voltage to dimmer is 277V, control voltage at the ballast (from the dimmer) shall be 277V at full light output and 129V at minimum light output.
- 4.5 Ballast shall be Philips Advance part # \_\_\_\_\_ or approved equal.



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