Product Introduction
The TRAN-BAL® is an electronic inverter ballast that uses AC or DC from either a battery or power supply to produce high frequency AC to start and operate fluorescent lamps. No other ballast or starter is required. Technically referred to as an inverter ballast, TRAN-BALs® are designed for use in commercial and industrial applications for a broad range of fluorescent lamp sizes and types. Special model TRAN-BALs® can be designed to customer specifications for low pressure sodium, germicidal, and ultraviolet lamps as well as for AC input applications.

Application
The TRAN-BAL® is designed for use in commercial and industrial applications that require long product life and dependable operation. Examples include: vehicle lighting in ambulances, buses, commercial vans and subways; flicker-free light sources for photoelectric applications, inspection systems, scanning equipment, and reprographic equipment; solar energy and energy efficient lighting from photovoltaic systems.

TRAN-BAL® Advantages:
• Eliminates the need for starters and other ballasts
• Achieves high frequency operation, eliminating audible noise
• Much higher efficiency than magnetic AC ballasts
• Allows operation of lamps at customized power levels - lamps can be overdriven or underdriven
• Eliminates 50/60 Hz flicker
• Small in size and weight
Operation
The TRAN-BAL® inverter ballast operates fluorescent lamps by converting DC power into high frequency AC. Basic components of the circuit are:

- Polarity Protection - Protects circuitry from being damaged if DC input is reversed
- Inverter Oscillator - Transforms DC power into high frequency AC power
- Step-Up Transformer - Increases AC voltage to the level needed to start and operate the lamp
- Output Circuit - Limits lamp current to desired level, regulating the lamp power and allows for fail-safe inverter operation if the lamp fails or is removed

Power Source
The DC power source can be either a battery or power supply. If a power supply is used, it should be capable of delivering twice the input current rating of the model selected for proper starting. Any ripple in the DC power source will be introduced into the lamp output, so if lamp flicker is a concern, the DC power input should be ripple-free. TRAN-BAL®s® are also available for AC input applications in a wide range of voltages and operating frequencies.

Heat Sink
A heat sink is required for some TRAN-BAL® models. Generally, a fixture large enough to hold the lamps provides adequate heat dissipation. However, any piece of metal capable of absorbing heat generated by the ballast can be used. Inadequate heat sinking can result in TRAN-BAL® failure. Please consult the factory with specific questions regarding the use of heat sinks in your application.

Radio Frequency Interference (RFI)
TRAN-BAL® are designed to meet regulations set forth by the Federal Communications Commission (FCC). However, this does not mean that the combination of the ballast, lamp, power source, and wiring will meet FCC regulations. Caution should be used to prevent associated wiring from conducting and/or radiating energy. When the battery or power supply is remote from the ballast, a shielded supply line is recommended. Self-shielding is accomplished when the battery wiring and fixture are contained within a metal framework.
Model Selection

TRAN-BALs® are categorized by series letter (e.g., Series A, B, E, J, K, and P). These letters indicate differences in physical characteristics and maximum lamp loads for models within each series.

Input Voltage

Ballasts for AC or DC input are available. The voltages can vary over a range of -10% to +20% of nominal voltage. Models for input voltages not shown in this catalog may be available as custom models.

Starting Circuit

Two types of starting circuits are available. RAPID START (R) provides heater voltages to aid lamp starting and is used with preheat and rapid start lamps. This circuit is recommended for applications requiring frequent lamp starting. INSTANT START (F) produces a high output voltage potential to start the lamp and may be used with preheat, rapid start, and instant start lamps. This circuit is recommended for applications requiring infrequent lamp starting.

Lamps Operated

Models are available to operate preheat, rapid start, and instant start fluorescent lamps from 4 through 215 watts.

Ballast Customization

If the lamp type for your application is not listed in this catalog, TRAN-BALs® can be customized for specific applications such as:

- Germicidal
- High Output
- Very High Output
- Ultraviolet
- Low Pressure Sodium
- Other AC or DC Input Voltages

In some cases, it is possible to arrange UL Listing for TRAN-BALs®. Engineering fees for customization vary according to design needs.

Warranty

Most models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.
Ordering Information
To place an order for TRAN-BAL® products, please call one of the following numbers for immediate service: 1-888-263-4630 or 1-888-263-4631. You can also fax your purchase order to: 901-853-5009.

To expedite the ordering process, please have the following information available:

• Model number and quantity required
• Contact name and phone number
• “Ship to” address (No P. O. Boxes, please)
• “Bill to” address
• Method of payment:
  C.O.D.
  Visa or Master Card
• Net 30 terms available with proper credit approval
  Dun and Bradstreet number
  Bank/Trade References
Series A is for use with one 4 - 13 W T5 fluorescent lamp operating from 6 - 12 VDC at 20 - 100 kHz (see Series A Table). This series is available as Instant Start only.

Features
- Small - easy to install in locations where space is limited.
- Open circuitry - circuit board is small enough to become an integral component in a variety of manufactured items.
- Low cost - suitable for price-sensitive applications.

Typical Applications
The smallest of the TRAN-BAL® line, this versatile series is most useful when space limitations and price are prime considerations. Applications include lighted instrument panels, emergency, and portable lighting.

<table>
<thead>
<tr>
<th>SERIES A TABLE</th>
<th>LAMP (DIAMETER)</th>
<th>BASE TYPE</th>
<th>WATTAGE (LENGTH)</th>
<th>NUMBER OF LAMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5 (5/8&quot;)</td>
<td>MINIATURE BIPIN</td>
<td>4 - 13 W (6&quot; - 21&quot;)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Series A

Warranty
Models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>INPUT VOLTAGE</th>
<th>STARTING CIRCUIT</th>
<th>NUMBER OF LAMPS</th>
<th>WATTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6F4-6A</td>
<td>6 VDC</td>
<td>F = INSTANT START</td>
<td>1</td>
<td>4 - 6 W</td>
</tr>
<tr>
<td>12F4-8A</td>
<td>12 VDC</td>
<td>F = INSTANT START</td>
<td>1</td>
<td>4 - 8 W</td>
</tr>
<tr>
<td>12F4-13A</td>
<td>12 VDC</td>
<td>F = INSTANT START</td>
<td>1</td>
<td>4 - 13 W</td>
</tr>
</tbody>
</table>

Wiring Diagram

[Diagram showing wiring connections for Series A models]
Series B

Operation
Series B is for use with most 4 - 55 W T5, T8, T9, or T12 fluorescent or ultraviolet lamps operating from 12 - 120 VDC or 120 or 240 VAC. Models are also available for use with one low pressure sodium lamp (see Series B Table). This series is available as Instant Start or Rapid Start.

Features
• Standard size - easy to install.
• AC or DC input versions available.
• Reverse voltage protection - DC input models only.
• Available for use with some HO lamps.

Typical Applications
This series is for use in fixtures where an electronic ballast is preferred to eliminate flicker.

<table>
<thead>
<tr>
<th>SERIES B TABLE</th>
<th>LAMP (DIAMETER)</th>
<th>BASE TYPE</th>
<th>WATTAGE (LENGTH)</th>
<th>NUMBER OF LAMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T5, T8, T9, T12</td>
<td>SINGLE OR BIPIN</td>
<td>4 - 55 W (6” - 6’)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(5/8”, 1”, 1-1/8”, 1-1/2”)</td>
<td>4 - 20 W (6” - 2’)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LONG COMPACT</td>
<td>4-PIN (2G11)</td>
<td>18 - 39 W</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18 W</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>COMPACT</td>
<td>4-PIN (G24q, GX24q)</td>
<td>18 - 42 W</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>LOW PRESSURE SODIUM</td>
<td>BY22d</td>
<td>18 - 55 W</td>
<td>1</td>
</tr>
</tbody>
</table>
## Warranty
Models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.

### SERIES B MODEL TYPES

<table>
<thead>
<tr>
<th>INPUT VOLTAGE</th>
<th>STARTING CIRCUIT</th>
<th>NUMBER OF LAMPS</th>
<th>WATTAGE</th>
</tr>
</thead>
</table>
| 120 VAC or 12 - 120 VDC | F = INSTANT START  
R = RAPID START | 1 | 4 - 55 W |
|               | TF = TWO-LAMP INSTANT START  
TR = TWO-LAMP RAPID START | 2 | 4 - 20 W |
|               | LPS = LOW PRESSURE SODIUM | 1 | 18 - 55 W |

### Wiring Diagrams

- **F STARTING CIRCUIT**
  - (+ DC or AC HOT) → RED  
  - (- DC or AC NEU) → WHT  
  - BLU → LAMP

- **TF STARTING CIRCUIT**
  - (+ DC or AC HOT) → RED  
  - (- DC or AC NEU) → WHT  
  - BLU → LAMP

- **R STARTING CIRCUIT**
  - (+ DC or AC HOT) → RED  
  - (- DC or AC NEU) → WHT  
  - BLU → LAMP

- **TR STARTING CIRCUIT**
  - (+ DC or AC HOT) → RED  
  - (- DC or AC NEU) → WHT  
  - BLU → LAMP

- **LPS STARTING CIRCUIT**
  - (+ DC or AC HOT) → RED  
  - (- DC or AC NEU) → WHT  
  - BLU → LAMP

- **QUAD 4-PIN LAMP**
  - BLU → LAMP
Operation
Series E is for use with most 4 - 55 W T5, T8, T9, or T12 fluorescent or ultraviolet lamps operating from 6 - 48 VDC. Models are also available for use with one low pressure sodium lamp (LPS) (see Series E Table). This series is available as Instant Start or Rapid Start.

Features
- Versatile - operates a variety of lamp types.
- Size - small, easy to install.
- Reverse voltage protection.

Typical Applications
This series meets the specifications for many applications, including computer scanners, copiers, food processing, and laboratory equipment; motor home and vending vehicles; and solar-powered or wind-generated lighting.

<table>
<thead>
<tr>
<th>SERIES E TABLE</th>
<th>LAMP (DIAMETER)</th>
<th>BASE TYPE</th>
<th>WATTAGE (LENGTH)</th>
<th>NUMBER OF LAMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5, T8, T9, T12 (5/8&quot;, 1&quot;, 1-1/8&quot;, 1-1/2&quot;)</td>
<td>SINGLE OR BIPIN</td>
<td>4 - 55 W (6&quot; - 6')</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - 20 W (6&quot; - 2')</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>COMPACT TWIN TUBE</td>
<td>2-PIN (G23, GX23)</td>
<td>5 - 9 W</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 - 13 W</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-PIN (2G11, 2G7, 2GX7)</td>
<td>5 - 18 W</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 - 39 W</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>COMPACT</td>
<td>4-PIN (G24q, GX24q)</td>
<td>18 - 32 W</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>LOW PRESSURE SODIUM</td>
<td>BY22d</td>
<td>18 - 35 W</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Warranty
Models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.

<table>
<thead>
<tr>
<th>SERIES E MODEL TYPES</th>
<th>NUMBER OF LAMPS</th>
<th>WATTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INPUT VOLTAGE</td>
<td>STARTING CIRCUIT</td>
<td></td>
</tr>
<tr>
<td>6 - 48 VDC</td>
<td>F = INSTANT START</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>R = RAPID START</td>
<td>4 - 55 W</td>
</tr>
<tr>
<td></td>
<td>PL = TWIN TUBE</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>LPS = LOW PRESSURE SODIUM</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF = TWO-LAMP INSTANT START</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TR = TWO-LAMP RAPID START</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TPL = TWO-LAMP TWIN TUBE</td>
<td>2</td>
</tr>
</tbody>
</table>

Wiring Diagrams

- **R** STARTING CIRCUIT
- **F** STARTING CIRCUIT
- **LPS** STARTING CIRCUIT
- **TPL** STARTING CIRCUIT
- **TR** STARTING CIRCUIT
- **TF** STARTING CIRCUIT
- **PL** STARTING CIRCUIT
- **TPL** STARTING CIRCUIT
- **TWIN TUBE LAMP**
- **QUAD 4-PIN LAMP**
Series J

Operation
Series J is for use with most 45 - 215 W HO or VHO T12 fluorescent lamps operating from 120 or 240 VAC (see Series J Table). This series is available as Rapid Start only.

Features
- Standard ballast width, length, and mounting length.
- Low output flicker.
- Capable of overdriving lamps for greatest light output.
- Suitable for aperture and reflector lamps.
- Input transient protection.
- High efficiency - low ballast temperatures, low line current.

Typical Applications
This series is for use in lighting systems that require very high levels of flicker-free illumination.

SERIES J TABLE

<table>
<thead>
<tr>
<th>LAMP (DIAMETER)</th>
<th>BASE TYPE</th>
<th>WATTAGE (LENGTH)</th>
<th>NUMBER OF LAMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>T12 (1-1/2&quot;)</td>
<td>RECESSED DOUBLE CONTACT</td>
<td>60 - 215 W VHO</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60 - 135 W VHO</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45 - 110 W HO</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>45 - 85 W HO</td>
<td>2</td>
</tr>
</tbody>
</table>
Series J

Warranty
Models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.

<table>
<thead>
<tr>
<th>INPUT VOLTAGE</th>
<th>STARTING CIRCUIT</th>
<th>NUMBER OF LAMPS</th>
<th>WATTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 VAC</td>
<td>R = RAPID START</td>
<td>1</td>
<td>60 - 215 W (VHO)</td>
</tr>
<tr>
<td></td>
<td>TR = TWO-LAMP</td>
<td>2</td>
<td>60 - 135 W (VHO)</td>
</tr>
<tr>
<td></td>
<td>RAPID START</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TR = TWO-LAMP</td>
<td>2</td>
<td>45 - 85 W (HO)</td>
</tr>
<tr>
<td></td>
<td>RAPID START</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please note: Several J models have been developed with dual voltage capability (120/240 VAC, 50/60 Hz).

Wiring Diagrams

Diagram 1: R STARTING CIRCUIT
Diagram 2: TR STARTING CIRCUIT
Series K

Operation
Series K is for use with most 4 - 40 W T5 or T12 fluorescent lamps operating from 12 - 24 VDC (see Series K Table). This series is available as Instant Start only.

Features
• Versatile - operates a variety of lamp types.
• Convenient - through-wall connector simplifies testing.
• Reverse voltage protection.

Typical Applications
This series meets the specifications for many applications, including computer scanners, copiers, food processing, and laboratory equipment; and solar-powered or wind-generated lighting.

<table>
<thead>
<tr>
<th>SERIES K TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAMP (DIAMETER)</td>
</tr>
<tr>
<td>T5, T12 (5/8&quot;, 1-1/2&quot;)</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Series K

Warranty
Models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.

**SERIES K MODELS AVAILABLE**

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>INPUT VOLTAGE</th>
<th>STARTING CIRCUIT</th>
<th># OF LAMPS</th>
<th>WATTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>12TF4-13K</td>
<td>12 VDC</td>
<td>TF = TWO-LAMP INSTANT START</td>
<td>1 or 2 T5 LAMPS</td>
<td>4 - 13 W</td>
</tr>
<tr>
<td>12TF13-20K</td>
<td>12 VDC</td>
<td>TF = TWO-LAMP INSTANT START</td>
<td>1 or 2 T8 or T12 LAMPS</td>
<td>13 - 20 W</td>
</tr>
<tr>
<td>12F13-40K</td>
<td>12 VDC</td>
<td>F = INSTANT START</td>
<td>1 T8 or T12 LAMP</td>
<td>13 - 40 W</td>
</tr>
<tr>
<td>24TF4-13K</td>
<td>24 VDC</td>
<td>TF = TWO-LAMP INSTANT START</td>
<td>1 or 2 T5 LAMPS</td>
<td>4 - 13 W</td>
</tr>
<tr>
<td>24TF13-20K</td>
<td>24 VDC</td>
<td>TF = TWO-LAMP INSTANT START</td>
<td>1 or 2 T8 or T12 LAMPS</td>
<td>13 - 20 W</td>
</tr>
<tr>
<td>24F13-40K</td>
<td>24 VDC</td>
<td>F = INSTANT START</td>
<td>1 T8 or T12 LAMP</td>
<td>13 - 40 W</td>
</tr>
</tbody>
</table>

Wiring Diagrams

For one lamp operation cap unused blue lead.
Series P

Operation
Series P is for use with two 110 - 160 W T12 VHO fluorescent lamps operating from 120 VAC (see Series P Table). This series is available as Rapid Start only.

Features
• Standard ballast width, length, and mounting length.
• Low output flicker.
• Capable of overdriving lamps for greatest light output.
• Suitable for aperture and reflector lamps.
• Input transient protection.
• High efficiency - low ballast temperatures, low line current.

Typical Applications
This series is for use in lighting systems that require very high levels of flicker-free illumination.

<table>
<thead>
<tr>
<th>SERIES P TABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAMP (DIAMETER)</td>
</tr>
<tr>
<td>T12 (1-1/2”)</td>
</tr>
</tbody>
</table>
Series P

Warranty
Models are warranted for one year against defective material and workmanship. For the warranty period, Bodine will, at its option, replace a TRAN-BAL unit, provided the unit is returned to the factory, transportation prepaid, with prior authorization and, in our judgement, has not been subject to misuse, improper installation, or misapplication.

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>INPUT VOLTAGE</th>
<th>STARTING CIRCUIT</th>
<th># OF LAMPS</th>
<th>WATTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A120TR160P</td>
<td>120 VAC</td>
<td>TR = TWO-LAMP RAPID START</td>
<td>2</td>
<td>110 - 160 W</td>
</tr>
</tbody>
</table>

Wiring Diagram
Manufacturer

The Bodine Company, Inc.

The Bodine Company, Inc. introduced the first TRAN-BAL® electronic inverter ballast in 1964. Since then the company has specialized in inverter ballast technology and is currently a major producer of fluorescent emergency ballasts. TRAN-BALs® are sold direct from the factory.

The Bodine Company is a member of the Illuminating Engineering Society of North America (IESNA) and National Electrical Manufacturers Association (NEMA).

The Bodine Company is located at the following address:

The Bodine Company
236 Mount Pleasant Road
Collierville, TN 38017