Definition
Slim, lightweight, high frequency (> 42khz) electronic ballast for TL5 fluorescent lamps at 220 –240V 50/60Hz.

Features & Benefits:
• Up to 25% reduction in energy consumption at constant luminous flux compared with conventional gear.
• Less strain on the eyes improves productivity as the electronic ballast with higher operating frequency (>42khz) does not cause the lamp to flicker at 50Hz operation.
• Safety is ensured by the use of flame resistant Polycarbonate cover.
• Automatic stop circuit is activated within five seconds in case of lamp failure (Safety stop).
• Electromagnetic compatibility with other electrical devices gives you no hassles.
• RoHS compliant product that gives you a “green image” & meeting government directives.

Applications
Typical areas of application include:
• Department stores, Malls, Shops, Hyper-and Supermarkets
• Office buildings, Banks, government ministries
• Industrial premises

Philips quality
This assures optimum quality regarding:
• System supplier
  As manufacturer of lamps, electronic control gear and lighting control equipment, Philips ensures that, from the earliest development stage, optimum lamp/ballast performance is maintained.
• International standards
  Philips Electronic Ballast’s complies with all relevant international standards and regulations.

Compliances and approvals
• EMI CISPR 15
• RFI<30 MHz EN 55015 (EMC)
• RFI>30 MHz EN 55015
• Harmonics IEC 61000-3-2 (EMC)
• Immunity EN 61547 (EMC)
• Safety IEC 61347-2-3
• Vibration & bump tests EN 60068-2-6-FC, EN 60068-2-29-Eb
• Quality standard ISO 9001
• Environmental standard ISO 14001, RoHS compliant
• Approval marks CE, CCC, C-Tick TlSi

<table>
<thead>
<tr>
<th>TYPE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<tbody>
<tr>
<td>EB-S 114/21 TL5</td>
<td>275</td>
<td>265</td>
<td>30</td>
<td>28</td>
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<td>EB-S 128/35 TL5</td>
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<td>265</td>
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<td>28</td>
<td>4.2</td>
</tr>
<tr>
<td>EB-S 214/28 TL5</td>
<td>275</td>
<td>265</td>
<td>30</td>
<td>28</td>
<td>4.2</td>
</tr>
<tr>
<td>EB-S 235 TL5</td>
<td>275</td>
<td>265</td>
<td>30</td>
<td>28</td>
<td>4.2</td>
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</tbody>
</table>
Technical data for installation

Mains operation
Rated mains voltage 220-240 V
With tolerances for safety: ± 10% 198-253 V
Ignition and operation possible between 176-264 V
Mains frequency 50/60 Hz
DC voltage operation during emergency back-up No
For DC voltage:
Required battery voltage for guaranteed ignition 198V - 254V DC
Required battery voltage for burning lamps 176V - 254V DC

Notes:
1. For continuous DC application, an external fuse should be used in the luminaires
2. Continuous low DC voltages (<198V) can influence the lifetime of the ballast

Earth leakage current < 0.5 mA r.m.s
Ignition time Typically 1.6 sec.
Constant light operation In case of AC mains voltage fluctuations, within 202-254 V, the luminous flux Changes by a maximum of ± 5%
Overvoltage protection up to 320V, ballast suffers no damage for 48 hrs
Under voltage protection from 176 to 198V, ballast suffers no damage for 48 hrs

Cable Capacity Max 75pF between lamp wires lp-lp
Max 120pF between lamp wires and earth lp-gnd
Dual fixture: master-slave Possible, in general a maximum of 2m lamp wires between ballast and lamps are allowed
Automatic restart after lamp replacement No
Insulation resistance test 500 V DC from Line/Neutral to Earth (not between Line and Neutral)
Note: Ensure that the neutral is reconnected again after above mentioned test is carried out and before the installation is put in operation

Technical data in relation to energy saving (all typical values at Vmains =230V)

<table>
<thead>
<tr>
<th>Lamp Qty. of Lamps</th>
<th>Ballast type</th>
<th>System Power</th>
<th>Lamp Power</th>
<th>Power Losses</th>
<th>CELMA</th>
<th>THD</th>
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<tbody>
<tr>
<td>TL5 1W</td>
<td>1</td>
<td>EB-S 114/21 TL5</td>
<td>17</td>
<td>1 x 143</td>
<td>2.7</td>
<td>A3</td>
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<tr>
<td>TL5 1W</td>
<td>2</td>
<td>EB-S 214-28 TL5</td>
<td>34</td>
<td>2 x 145</td>
<td>5.0</td>
<td>A3</td>
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<tr>
<td>TL5 2W</td>
<td>1</td>
<td>EB-S 114/21 TL5</td>
<td>24</td>
<td>1 x 210</td>
<td>3.0</td>
<td>A3</td>
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<tr>
<td>TL5 2W</td>
<td>2</td>
<td>EB-S 214-28 TL5</td>
<td>47</td>
<td>2 x 207</td>
<td>5.6</td>
<td>A3</td>
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<tr>
<td>TL5 3W</td>
<td>1</td>
<td>EB-S 128/35 TL5</td>
<td>32</td>
<td>1 x 290</td>
<td>3.0</td>
<td>A3</td>
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<tr>
<td>TL5 3W</td>
<td>2</td>
<td>EB-S 214-28 TL5</td>
<td>64</td>
<td>2 x 275</td>
<td>9.0</td>
<td>A3</td>
</tr>
<tr>
<td>TL5 5W</td>
<td>1</td>
<td>EB-S 128/35 TL5</td>
<td>37</td>
<td>1 x 355</td>
<td>3.5</td>
<td>A3</td>
</tr>
<tr>
<td>TL5 5W</td>
<td>2</td>
<td>EB-S 235 TL5</td>
<td>82</td>
<td>2 x 37</td>
<td>8.0</td>
<td>A3</td>
</tr>
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</table>

Required battery voltage for guaranteed ignition 198V - 254V DC
Required battery voltage for burning lamps 176V - 254V DC

Notes:
1. For continuous DC application, an external fuse should be used in the luminaires
2. Continuous low DC voltages (<198V) can influence the lifetime of the ballast
### Conversion table for max. quantities of ballasts on other types of Miniature Circuit Breaker

<table>
<thead>
<tr>
<th>MCB Type</th>
<th>Relative quantity of ballasts</th>
<th>Max. quantity of ballasts per Miniature Circuit Breaker</th>
<th>Inrush current 1/2 value time at typical mains impedance</th>
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<tbody>
<tr>
<td>B</td>
<td>100% (see table above)</td>
<td>EB-S 114/21 TL5 1 x 14/21W TL5 0.28</td>
<td>EB-S 114/21 TL5 1 x 14/21W TL5 28 20A/200 μs</td>
</tr>
<tr>
<td>B</td>
<td>63%</td>
<td>EB-S 128/35 TL5 1 x 28/35W TL5 0.15</td>
<td>EB-S 128/35 TL5 1 x 28/35W TL5 28 20A/200 μs</td>
</tr>
<tr>
<td>C</td>
<td>170%</td>
<td>EB-S 214-28 TL5 2 x 14/21W TL5 0.15</td>
<td>EB-S 214-28 TL5 2 x 14/21W TL5 18 25A/300 μs</td>
</tr>
<tr>
<td>L, I</td>
<td>108%</td>
<td>EB-S 214-28 TL5 2 x 28W TL5 0.28</td>
<td>EB-S 235 TL5 2 x 35W TL5 18 25A/300 μs</td>
</tr>
<tr>
<td>L, I</td>
<td>65%</td>
<td>EB-S 235 TL5 2 x 35W TL5 0.36</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
1. Data is based on a mains supply with an impedance of 400 mΩ (equal to 15 m cable of 2.5mm² and another 20m to the middle of the power distribution), under worst case conditions. With an impedance of 800 mΩ the number of ballasts can be increased by 10%.
2. Measurements will be verified in real installations; therefore data are subject to change.
3. In some cases the maximum number of ballasts is not determined by the MCB but by the maximum electrical load of the lighting installation.
4. Note that the maximum number of ballasts is given when these are all switched on the same moment, i.e. by a wall switch.
5. Measurements were carried out on single-pole MCB’s. For multi-pole MCB’s it is advisable to reduce the number of ballasts by 20%.
6. The maximum number of ballasts which can be connected to one Residual Current Detector of 30mA is 30.
7. The average cable capacity Lp-Gnd is 100pF per meter for standard installation wire Diameter 1.0 mm (bundled lamp wiring situation). For more information regarding this subject consult the Philips Application guide to fluorescent lamp control gear.
Fluorescent electronic

Wiring diagrams

**Connector type:**
Connection wiring is greatly simplified through use of insert contacts with push buttons. Earth connection can be made via housing.

**Wire lengths:**
For optimal performance, note that following wires need to be kept short:
For one lamp circuits keep wires to terminals 1 and 2 short;
For two lamp circuits keep wires to terminals 1, 2, and 4 short.

**Wire cross-section:**
- Mains: 0.5mm – 1.5mm²
- Lamp(s) connector: 0.5mm – 1.5mm²
- Strip length: 9.0 – 10.0 mm

**Ordering and packing data**

<table>
<thead>
<tr>
<th>Ballast</th>
<th>Ordering Number</th>
<th>weight</th>
<th>Packing Qty</th>
<th>Dimensions L x W x H cm</th>
<th>Volume m³</th>
<th>Weight Gross kg</th>
<th>EAN code</th>
<th>EOC</th>
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<tbody>
<tr>
<td>EB-S 17421 TL5</td>
<td>9 137 130 22 1166</td>
<td>0.250</td>
<td>20</td>
<td>32.5 x 35.5 x 7.5</td>
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<td>EB-S 12835 TL5</td>
<td>9 137 130 22 2666</td>
<td>0.250</td>
<td>20</td>
<td>32.5 x 35.5 x 7.5</td>
<td>0.0058</td>
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<td>8710163063850</td>
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<tr>
<td>EB-S 21428 TL5</td>
<td>9 137 130 22 3666</td>
<td>0.250</td>
<td>20</td>
<td>32.5 x 35.5 x 7.5</td>
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<td>32.5 x 35.5 x 7.5</td>
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