

## Electronic ballasts for compact fluorescent lamps

14-80 W 220-240 V, 50-60 Hz

- Smallest available quality ballast
- Standard & sidemount possibilities
- Optimal lamp operation
- Low power losses
- Long lifetime
- Green values
- High power factor

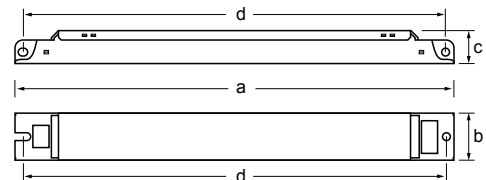


### A2 BAT

| Lamp type | Wattage | No. of lamps | Ballast                  | EEI    | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|-----------|---------|--------------|--------------------------|--------|------------|------------|--------|---------------|---------------|------------|
|           |         |              |                          |        |            | (p.30)     | (g)    | (W)           | (A)           | (W)        |
| TC-L      | 24      | 1            | EL1x24ngn5               | A2     | 1          | 1          | 130    | 25            | 0.12-0.11     | 22.5       |
|           | 24      | 2            | EL2x24ngn5               | A2 BAT | 2          | 8          | 193    | 49            | 0.24-0.21     | 22.5       |
|           | 24      | 3            | EL3/4x24ngn5             | A2 BAT | 2          | 6          | 208    | 73            | 0.34-0.30     | 22.5       |
|           | 24      | 4            | EL3/4x24ngn5             | A2 BAT | 2          | 7          | 208    | 97            | 0.44-0.40     | 22.5       |
|           | 36      | 1            | EL1x39/36ngn5            | A2     | 1          | 1          | 130    | 35            | 0.16-0.15     | 32         |
|           | 36      | 2            | EL2x39/36ngn5            | A2 BAT | 2          | 8          | 195    | 69            | 0.32-0.29     | 32         |
|           | 55      | 1            | EL1x55ngn5 <sup>1)</sup> | A2 BAT | 2          | 1          | 195    | 60            | 0.28-0.24     | 55         |
|           | 55      | 2            | EL2x55ngn5               | A2 BAT | 3          | 8          | 240    | 118           | 0.54-0.49     | 55         |
|           | 80      | 1            | EL1x80ngn5               | A2 BAT | 2          | 1          | 192    | 86            | 0.42-0.36     | 80         |
|           | 80      | 2            | EL2x80ngn5               | A2 BAT | 3          | 13         | 300    | 170           | 0.80-0.73     | 80         |

Note: See pages 30-33 for connection diagrams and additional characteristics.  
 1) Also ENEC approved for 55 W T5-C lamps

| Dimensions      | 1   | 2   | 3   |
|-----------------|-----|-----|-----|
| Lenght 'a' (mm) | 190 | 280 | 360 |
| Width 'b' (mm)  | 30  | 30  | 30  |
| Height 'c' (mm) | 21  | 21  | 21  |
| 'd' (mm)        | 180 | 270 | 350 |

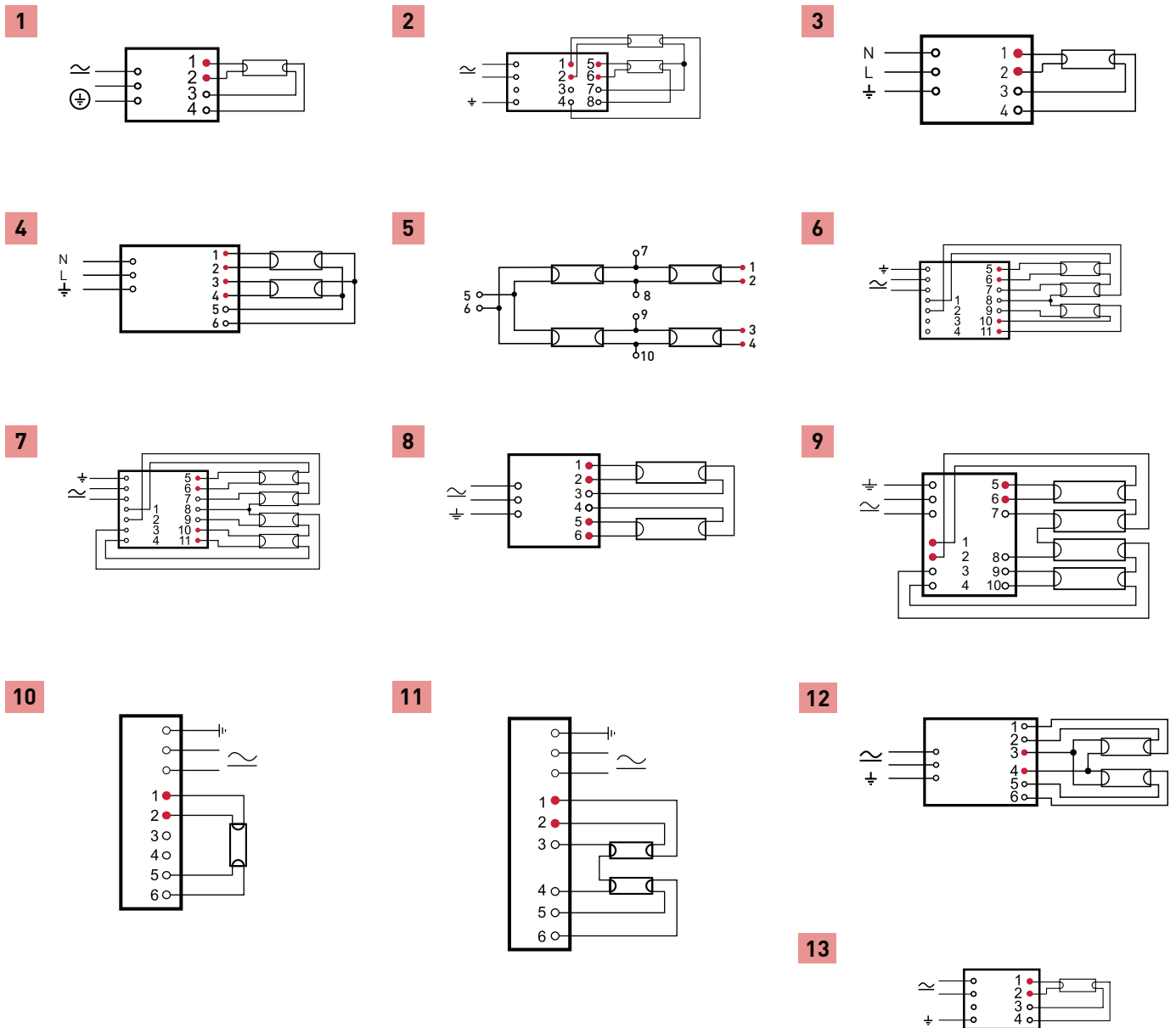


| Delivery information      |                         |                       |                                  |                    |                    |
|---------------------------|-------------------------|-----------------------|----------------------------------|--------------------|--------------------|
| Ballast                   | Unit package            |                       | Transportation package           |                    |                    |
|                           | Minimum delivery amount | Plastic binding strip | One-way pallet 1200 x 820 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x ngn5                | 10                      | ●                     | 2000                             | 260-300            | 48                 |
| EL2 x ngn5 & EL3/4 x ngn5 | 10                      | ●                     | 2000                             | 400-450            | 56                 |
| EL2x55ngn5 & EL2x80ngn5   | 10                      | ●                     | 1500                             | 400-420            | 56                 |

# Connection diagrams

## EL-ngn5, EL-s, EL-ngn, EL-es, EL-ef, EL-TCs

NOTE: All wiring to the connectors marked with a red dot (hot wires) should be as short as possible.



|    |   |
|----|---|
| 1  | EL1x...ngn, EL1x...ngn5   |
| 2  | EL2x58s, EL2x70s  |
| 3  | EL1x18ef, EL1x36ef, EL1x58ef  |
| 4  | EL2x18ef, EL2x36ef  |
| 5  | EL4x18ef  |
| 6  | EL3/4x18ngn (three lamp connection), EL3/4x14ngn5, EL3/4x24ngn5   |
| 7  | EL3/4x18ngn (four lamp connection), EL3/4x14ngn5, EL3/4x24ngn5, EL4x14ngn5  |
| 8  | EL2x18ngn, EL2x36ngn, EL2x58ngn, EL2x24ngn5, EL2x39/36ngn5, EL2x54ngn5, EL2x54ngn5-XL, EL2x55ngn5, EL2x36es, EL2x58es |
| 9  | EL4x18ngn, EL4x18es   |
| 10 | EL1/2x14/17TCs, EL1/2x18-42TCs, EL1/2x18TCs, EL1/2x9-13TCs, EL1/2x36/38TCs  |
| 11 | EL1/2x14/17TCs, EL1/2x18-42TCs, EL1/2x18TCs, EL1/2x9-13TCs, EL2x32/42TCs, EL1/2x36/38TCs                              |
| 12 | EL2x14-35ngn5, EL2x49ngn5, EL2x49ngn5-XL, EL2x80ngn5  |
| 13 | EL1x ...s   |

|                                      | EL-s                        | EL-ngn              | EL-ngn5  | EL-es                     | EL-TCs                     | EL-ef   |
|--------------------------------------|-----------------------------|---------------------|--|---------------------------|----------------------------|---|
| Max. temperature at $t_c$ point      | 75 °C <sup>3)</sup>         | 75 °C               | 75 °C <sup>7)10)</sup>                                       | 75 °C                     | 75 °C                      | 70 °C   |
| Ambient temperature range            | -20...+50 °C                | -20...+50 °C        | -20...+50 °C <sup>11)</sup>                                  | -15...+50 °C              | -20...+50 °C               | -15...+50 °C                                  |
| Storage temperature range            | -40...+80 °C                | -40...+80 °C        | -40...+80 °C   | -40...+80 °C              | -40...+80 °C               | -40...+80 °C                                  |
| Maximum relative humidity            | no condensation             | no condensation     | no condensation  | no condensation           | no condensation            | no condensation                               |
| Number of starts per lamp            | > 50 000                    | > 60 000            | > 50 000   | > 20 000                  | > 50 000                   | > 6 000                                       |
| AC Range                             | 198-264 VAC <sup>4)5)</sup> | 198-264 VAC         | 198-264 VAC  | 198-264 VAC               | 198-264 VAC                | 220 - 240 VAC                                 |
| DC range (starting voltage >190VDC)  | 176-280 VDC <sup>5)</sup>   | 176-280 VDC         | 176-280 VDC  | 198-264 VDC <sup>9)</sup> | 176-280 VDC <sup>11)</sup> | 220 - 240 VDC                                 |
| Over voltage duration                | 320 VAC, 1 h                | 320 VAC, 1 h        | 320 VAC, 1 h   | 320 VAC, 1 h              | 320 V / 1 h                | 270 VAC, 2 h                                  |
| Power factor (at maximum), typical   | 0.98                        | 0.98                | 0.98   | 0.98                      | > 0.95                     | 0.95  |
| Earth leakage current                | < 0.4 mA                    | < 0.4 mA            | < 0.4 mA   | < 0.4 mA                  | < 0.4 mA                   | < 0.4 mA                                      |
| Maximum working voltage (Uout)       | 400 V                       | 350 V <sup>6)</sup> | 400 V <sup>6)</sup>  | 350 V <sup>6)</sup>       | 250 V <sup>2)</sup>        | 280 V <sup>12)</sup>                          |
| Lifetime (90 % survival)             | 50 000 h, at $t_c$          | 60 000 h, at $t_c$  | 60 000 h, <sup>8)</sup> at $t_c$<br>>100 000h, at $T_a$ 50°C | 50 000 h, at $t_c$        | 50 000 h, at $t_c$         | 30 000 h, at $T_c$<br>45 000 h, at $T_a$ 50°C |
| Max length of ballast to lamp wiring | 2 m                         | 1.5 m               | 2 m  | 1.5 m                     | 1 m / 2 m<br>(hot / cold)  | 2 m   |
| Ignition time, typical               | ~1.0 s                      | < 1 s               | ~1 s   | < 2 s                     | ~1 s                       | 0.3 s   |

1) For 2 x 42 W lamp, DC range is 190-280 V

2) EL2x32/42TCs 300 V

3) For EL 2x70s,  $t_c$  = 70 °C

4) For EL2x70s AC range is 204-264 V

5) EL2x70s max 6 hours at 176-190 VDC

6) 3/4x18ngn, Uout = 400 V

7) 70 °C EL3/4x14ngn5

8) Please see page 33 for detailed information

9) Operationally suitable for emergency use with central battery

10) 85 °C, for EL-ngn5-XL-types

11) max  $T_a$  65 °C, for EL-ngn5-XL-types

12) Uout = 380 V for EL2x36ef & EL4x18ef

## Standards

|  | EL-s / EL-su | EL-ngn | EL-ngn5 | EL-es | EL-TCs | EL-ef |
|--|--------------|--------|---------|-------|--------|-------|
| General and safety requirements EN61347-2-3  | ●            | ●      | ●       | ●     | ●      | ●     |
| Additional safety requirements for AC/DC supplied ballasts acc. to EN61347-2-3 Annex J | ●            | ●      | ●       | -     | ●      | -     |
| Performance requirements EN60929   | ●            | ●      | ●       | ●     | ●      | -     |
| Preheat starting   | ●            | ●      | ●       | -     | ●      | -     |
| Lamp life acc. to EN60081 / EN60901 <sup>*</sup>                                       | ●            | ●      | ●       | ●     | ●      | ●     |
| Mains current harmonics, acc. to EN61000-3-2   | ●            | ●      | ●       | ●     | ●      | ●     |
| Radio Frequency Interference, acc. to EN55015  | ●            | ●      | ●       | ●     | ●      | ●     |
| Immunity standard, acc. to EN61547   | ●            | ●      | ●       | ●     | ●      | ●     |
| Vibration test EN60068-2-64 test Fh  | ●            | ●      | ●       | ●     | ●      | -     |
| Bump test EN60068-2-29 test Eb   | ●            | ●      | ●       | ●     | ●      | -     |
| Thermal protection class EN61347, C5e  | ●            | ●      | ●       | ●     | ●      | -     |
| Type of starting; preheat (warm start)   | ●            | ●      | ●       | ●     | ●      | -     |
| EBLF (Emergency Ballast Lumen Factor)  | -            | -      | >0,3    | -     | -      | -     |
| BLF (Ballast Lumen Factor)   | -            | -      | ~1      | -     | -      | ~1    |

\* EN 60081 for T5 & T8 fluorescent lamps, EN 60901 for compact fluorescent lamps