

Electronic ballasts for compact fluorescent lamps

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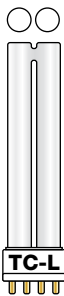
18-80 W 220-240 V, 50-60 Hz

- Only 21 mm high
- Optimal lamp operation
- Wide operational ambient temperature range
- Standard & sidemount possibilities
- Low power losses
- Silent operation
- Stabilized flickerfree light
- High power factor



A2

Lamp type	Wattage	No. of lamps	Ballast	EEL	Dimensions	Connection	Weight	Circuit power	Mains current	Lamp power
						(p.18)	(g)	(W)	(A)	(W)
	18	1	EL1x36/40/18s	A2	1	1	190	18	0.08	16
	18	1	EL1x36/40s-u ^{1) 2)}	A2	3	1	190	18	0.08	16
	24	1	EL1x24s	A2	1	1	190	25	0.12-0.11	22.5
	24	2	EL2x24s	A2	2	2	230	49	0.24-0.21	22.5
	24	3	EL3/4x24s-u ¹⁾	A2 BAT	3	7	215	73	0.34-0.30	22.5
	24	4	EL3/4x24s-u ¹⁾	A2 BAT	3	8	215	97	0.44-0.40	22.5
	26	1	EL1x14-35s ^{2) 3)}	A2	1	1	175	27	0.12	24.5
	26	1	EL1x14-35s-u ^{2) 3)}	A2	1	1	175	27	0.12	24.5
	26	2	EL2x14-35s ^{2) 3)}	A2	2	3	250	55	0.24	24.5
	26	2	EL2x14-35s-u ^{2) 3)}	A2	2	4	250	55	0.24	24.5
	28	1	EL1x14-35s ^{2) 3)}	A2	1	1	175	27	0.12	24.5
	28	1	EL1x14-35s-u ^{2) 3)}	A2	1	1	175	27	0.12	24.5
	28	2	EL2x14-35s ^{2) 3)}	A2	2	3	250	55	0.24	24.5
	28	2	EL2x14-35s-u ^{2) 3)}	A2	2	4	250	55	0.24	24.5
	36	1	EL1x39/36s	A2	1	1	190	35	0.16-0.15	32
	36	2	EL2x39/36s	A2	2	2	245	69	0.32-0.29	32
	40	1	EL1x36/40/18s	A2	1	1	190	45	0.20-0.18	40
	40	1	EL1x36/40s-u ¹⁾	A2	3	1	190	45	0.20-0.18	40
	40	2	EL2x36/40s	A2	2	2	245	87	0.40-0.36	40
	55	1	EL1x55s	A2	1	1	200	59.5	0.28-0.25	55
	55	2	EL2x55s	A2	2	2	260	117	0.55-0.50	55
	80	1	EL1x80s	A2	1	1	200	85	0.40-0.36	80
	80	2	EL2x80s-u ¹⁾	A2 BAT	4	4	305	170	0.80-0.73	80



Note: See pages 18-19 for connection diagrams and additional characteristics.

1) With terminals for both manual and automatic wiring (IDC & push-in)

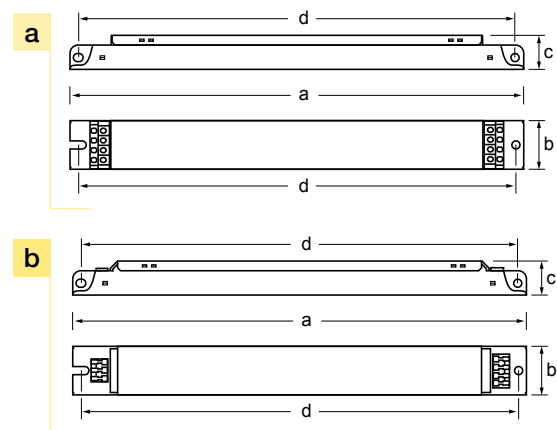
2) Tested and recommended by Helvar, not ENEC approved

3) Cap 2GX11

Dimensions	1	2	3	4
drawing	a	a	b	b
Length 'a' (mm)	280	360	280	360
Width 'b' (mm)	30	30	30	30
Height 'c' (mm)	21	21	21	21
'd' (mm)	270	350	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 s	10	●	2000	350 - 420	57
EL2 x s	10	●	1500	395	57
EL3/4 x s	10	●	1500	390	57



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						(p.18)	(g)	(W)	(A)	(W)
TC-F	18	1	EL1x36/40/18s	A2	1	1	190	18	0.08	16
	18	1	EL1x36/40s-u ^{1) 2)}	A2	3	1	190	18	0.08	16
	24	1	EL1x24s	A2	1	1	190	25	0.12-0.11	22.5
	24	2	EL2x24s	A2	2	2	230	49	0.24-0.21	22.5
	24	3	EL3/4x24s-u ^{1) 2) 3)}	A2 BAT	1	1	215	73	0.34-0.30	22.5
	24	4	EL3/4x24s-u ^{1) 2) 3)}	A2 BAT	2	2	215	97	0.44-0.40	22.5
	36	1	EL1x39/36s	A2	1	1	190	35	0.16-0.15	32
	36	2	EL2x39/36s	A2	2	2	245	69	0.32-0.29	32

Note: See pages 18-19 for connection diagrams and additional characteristics.

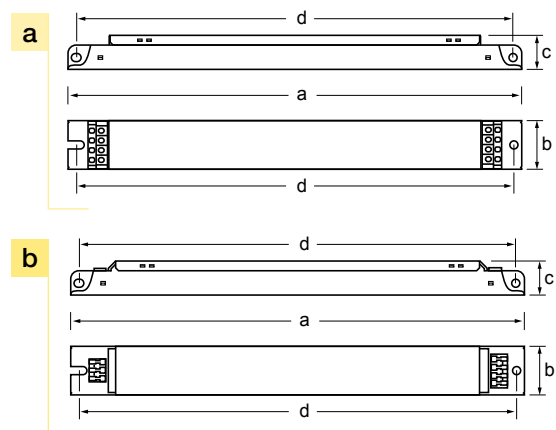
1) With terminals for both manual and automatic wiring (DC & push-in)

2) Tested and recommended by Helvar, not ENEC approved

3) For 3/4x24W TC-F lamps, $T_a = >18^{\circ}\text{C}$

Dimensions	1	2	3	4
drawing	a	a	b	b
Length 'a' (mm)	280	360	280	360
Width 'b' (mm)	30	30	30	30
Height 'c' (mm)	21	21	21	21
'd' (mm)	270	350	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 s	10	●	2000	350 - 420	57
EL2 x s	10	●	1500	395	57
EL3/4 x s	10	●	1500	390	57

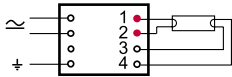


Connection diagrams

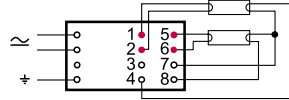
1 EL-s, EL-su, EL-ngn, EL-TCs

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

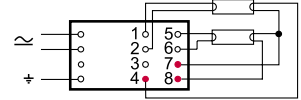
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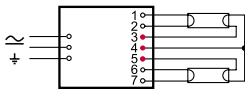
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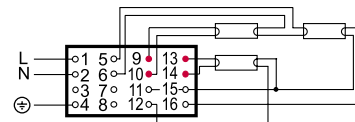
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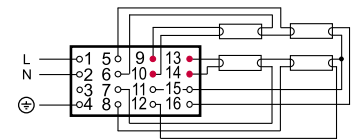
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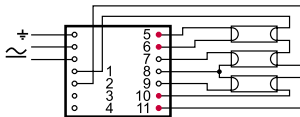
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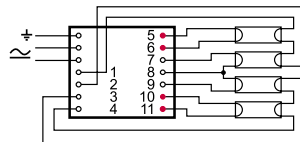
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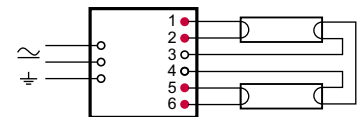
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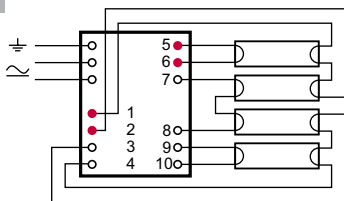
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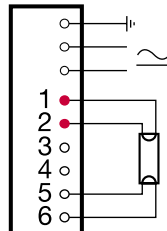
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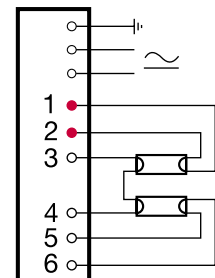
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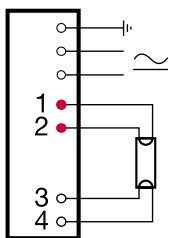
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12



13



- | | |
|----|--|
| 1 | EL1x ...s, EL1x...ngn |
| 2 | EL2x18s, EL2x24s, EL2x36/40s, EL2x39/36s, EL2x54s, EL2x55s, EL2x58s, EL2x70s |
| 3 | EL2x14-35s, EL2x49s |
| 4 | EL2x14-35s-u, EL2x36/40s-u, EL2x49s-u, EL2x58s-u, EL2x80s-u |
| 5 | EL3/4x14s, EL3/4x18s (three lamp connection) |
| 6 | EL3/4x14s, EL3/4x18s (four lamp connection) |
| 7 | EL3/4x14s-u, EL3/4x18s-u, EL3/4x24s-u (three lamp connection) |
| 8 | EL3/4x14s-u, EL3/4x18s-u, EL3/4x24s-u (four lamp connection) |
| 9 | EL2x18ngn, EL2x36ngn, EL2x58ngn |
| 10 | EL4x18ngn |
| 11 | EL1/2x14/17TCs, EL1/2x18-42TCs, EL1/2x18TCs, EL1/2x9-13TCs, EL1/2x36/38TCs |
| 12 | EL1/2x14/17TCs, EL1/2x18-42TCs, EL1/2x18TCs, EL1/2x9-13TCs, EL2x32/42TCs, EL1/2x36/38TCs |
| 13 | EL1x14/17TCs, EL1x18-42TCs, EL1x18TCs, EL1x9-13TCs |

Characteristics

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	EL-s / EL-su	EL-ngn	EL-TCs
Max.temperature at t _c point	75 °C ^{3) 4)}	75 °C	75 °C
Ambient temperature range	-20...+50 °C ⁷⁾	-20...+50 °C	-20...+50 °C
Storage temperature range	-40...+80 °C	-40...+80 °C	-40...+80 °C
Maximum relative humidity	no condensation	no condensation	no condensation
Number of starts per lamp	> 50 000	> 50 000	> 50 000
AC Range	198-264 VAC ⁵⁾⁶⁾	198-264 VAC	198-264 VAC
DC range (starting voltage >190VDC)	176-280 VDC ⁶⁾	176-280 VDC	176-280 VDC ¹⁾
Over voltage duration	320 VAC, 1 h	320 VAC, 1 h	320 V / 1 h
Power factor (at maximum), typical	0.98	0.98	> 0.95
Earth leakage current	< 0.4 mA	< 0.4 mA	< 0.4 mA
Maximum working voltage (U _{out})	400 V	350 V	250 V ²⁾
Lifetime (90 % survival)	50 000 h, at t _c	50 000 h, at t _c	50 000 h, at t _c
Max length of ballast to lamp wiring	2 m	1.5 m	1 m / 2 m (hot / cold)
Ignition time, typical	~1.0 s	< 1 s	~1 s

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

2) EL2x32/42TCs 300 V

3) For EL 3/4x14s and EL 3/4x18s, t_c = 80 °C

4) For EL 2x70s, t_c = 70 °C

5) For EL2x70s and EL2x80s-u AC range is 204-264 V

6) EL2x70s, EL2x55s and EL2x80s-u max 6 hours at 176-190 VDC

7) For 3/4x24W TC-F lamps, T_a = >18°C

Standards

	EL-s / EL-su	EL-ngn	EL-TCs
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 *)	●	●	●
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	●	●	●

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