

Electronic ballasts for compact fluorescent lamps

- Slim, only 28 mm high
- Multilamp operation
- Single and twin lamp operation
- Low power losses
- Single case size

9-40 W 220-240 V, 50-60 Hz



A2 BAT

Lamp type	Wattage	No. of lamps	Ballast	EEL	Connection	Weight	Circuit power	Mains current	Power factor	Lamp power
					(p.30)	(g)	(W)	(A)		(W)
TC-DD	10	1	EL1/2x9-13TCs	A2 BAT	11	118	12	0.05	0.91c	10.0
	16	1	EL1/2x9-13TCs	A2 BAT	11	118	17	0.08	0.95	15
	21	1	EL1/2x18-42TCs ¹⁾	A2 BAT	11	132	25	0.11	0.97	22.3
	28	1	EL1/2x18-42TCs	A2 BAT	11	132	29	0.13	0.97	27.0
	38	1	EL1/2x36/38TCs	A2 BAT	11	132	38	0.17	0.96	34.8
T5c	38	2	EL1/2x36/38TCs	A2 BAT	12	132	74	0.32	0.97	34
	22	1	EL1/2x18-42TCs	A2 BAT	11	132	25	0.12	0.95	22.6
T5	40	1	EL1/2x18-42TCs	A2 BAT	11	132	41	0.19	0.98	38.6
	14	1	EL1/2x9-13TCs ¹⁾	A2 BAT	11	118	16	0.07	0.95	14.7
T8	21	1	EL1/2x9-13TCs ¹⁾	A2 BAT	11	118	22.5	0.10	0.97	21
	28	1	EL1/2x9-13TCs ¹⁾	A2 BAT	11	118	31	0.14	0.97	28.2
TC-SE	30	2	EL2x32/42TCs ¹⁾	A2 BAT	11	132	57.5	0.25	0.97	26.6
	9	1	EL1/2x9-13TCs	A2 BAT	11	118	10	0.05	0.9c	8.5
	9	2	EL1/2x9-13TCs	A2 BAT	12	118	18	0.08	0.96	8.5
	11	1	EL1/2x9-13TCs	A2 BAT	11	118	14	0.07	0.93c	12.8
PL-R	11	2	EL1/2x9-13TCs	A2 BAT	12	118	27	0.12	0.98	12.9
	14	1	EL1/2x14/17TCs ¹⁾	A2 BAT	11	131	18	0.08	0.92c	15.8
	14	2	EL1/2x14/17TCs ¹⁾	A2 BAT	12	131	34	0.15	0.96	15.5
	17	1	EL1/2x14/17TCs ¹⁾	A2 BAT	11	131	21.5	0.1	0.93c	19.3
	17	2	EL1/2x14/17TCs	A2 BAT	12	131	41	0.18	0.96	18.6

Note: See pages 30-33 for connection diagrams and additional characteristics.

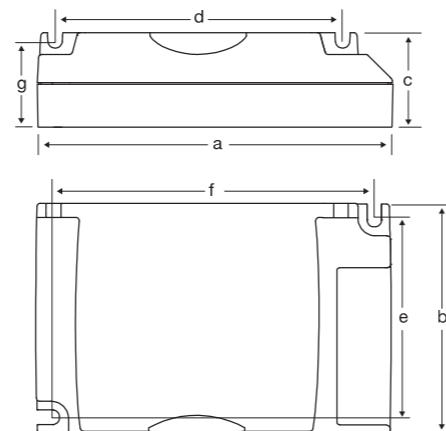
1) Tested and recommended by Helvar, not ENEC approved

Dimensions

Length 'a' (mm)	103.5
Width 'b' (mm)	67
Height 'c' (mm)	28
'd' (mm)	83.5
'e' (mm)	57.5
'f' (mm)	93.5
'g' (mm)	25.5

Delivery information

Ballast	Unit package		Transportation package		
	Minimum delivery amount	Carton Box	Pallet 820x1280 (pcs.)	Pallet weight (kg)	Pallet height (cm)
EL-TCs	60	●	1800	260	105



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9-26 W 220-240 V, 50-60 Hz



A2 BAT

Lamp type	Wattage	No. of lamps	Ballast	EEL	Connection	Weight	Circuit power	Mains current	Power factor	Lamp power
					(p.30)	(g)	(W)	(A)		(W)
TC-DE	10	1	EL1/2x9-13TCs	A2 BAT	11	118	10	0.05	0.9c	8.9
	10	2	EL1/2x9-13TCs	A2 BAT	12	118	20	0.09	0.97	8.9
	13	1	EL1/2x9-13TCs	A2 BAT	11	118	15	0.07	0.94c	13.8
	13	2	EL1/2x9-13TCs	A2 BAT	12	118	28	0.13	0.98	13.5
	18	1	EL1/2x18TCs	A2 BAT	11	120	19	0.09	0.96	16.9
TC-TE	18	2	EL1/2x18TCs	A2 BAT	12	120	36	0.16	0.98	16.9
	26	1	EL1/2x18-42TCs	A2 BAT	11	132	27	0.13	0.96	24.7
	26	2	EL1/2x18-42TCs	A2 BAT	12	132	51	0.23	0.98	23.8
	26	2	EL2x32/42TCs	A2 BAT	12	132	53	0.24	0.97	24
	13	1	EL1/2x9-13TCs	A2 BAT	11	118	15	0.07	0.94c	13.8
TC-TE	13	2	EL1/2x9-13TCs	A2 BAT	12	118	28	0.13	0.98	13.5
	18	1	EL1/2x18TCs	A2 BAT	11	120	19	0.09	0.96	16.9
	18	2	EL1/2x18TCs	A2 BAT	12	120	36	0.16	0.98	16.9
	26	1	EL1/2x18-42TCs	A2 BAT	11	132	27	0.13	0.96	24.7
	26	2	EL1/2x18-42TCs	A2 BAT	12	132	51	0.23	0.98	23.8
	26	2	EL2x32/42TCs	A2 BAT	12	132	53	0.24	0.97	24
	32	1	EL1/2x18-42TCs	A2 BAT	11	132	32	0.15	0.97	29.4
	32	2	EL2x32/42TCs	A2 BAT	12	132	64	0.29	0.98	28.5
	42	1	EL1/2x18-42TCs	A2 BAT	11	132	44	0.2	0.98	42.2
42	2	EL2x32/42TCs	A2 BAT	12	132	85	0.38	0.98	40.5	
57	1	EL1/2x18-42TCs	A2 BAT	11	132	58.5	0.26	0.99	54	

1) Ballast Lumen Factor for 1x14 W, 2x14 W, 1x17 W: 107 %

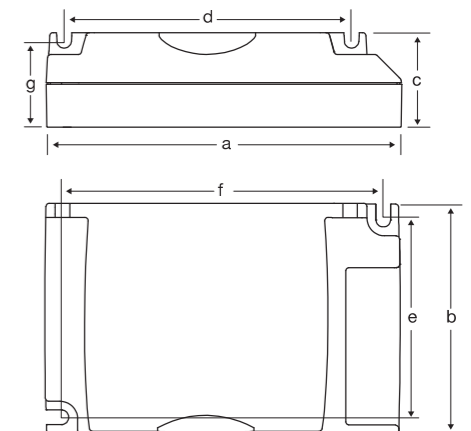
Note: See pages 30-33 for connection diagrams and additional characteristics.

Dimensions

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'd' (mm)	83.5
'e' (mm)	57.5
'f' (mm)	93.5
'g' (mm)	25.5

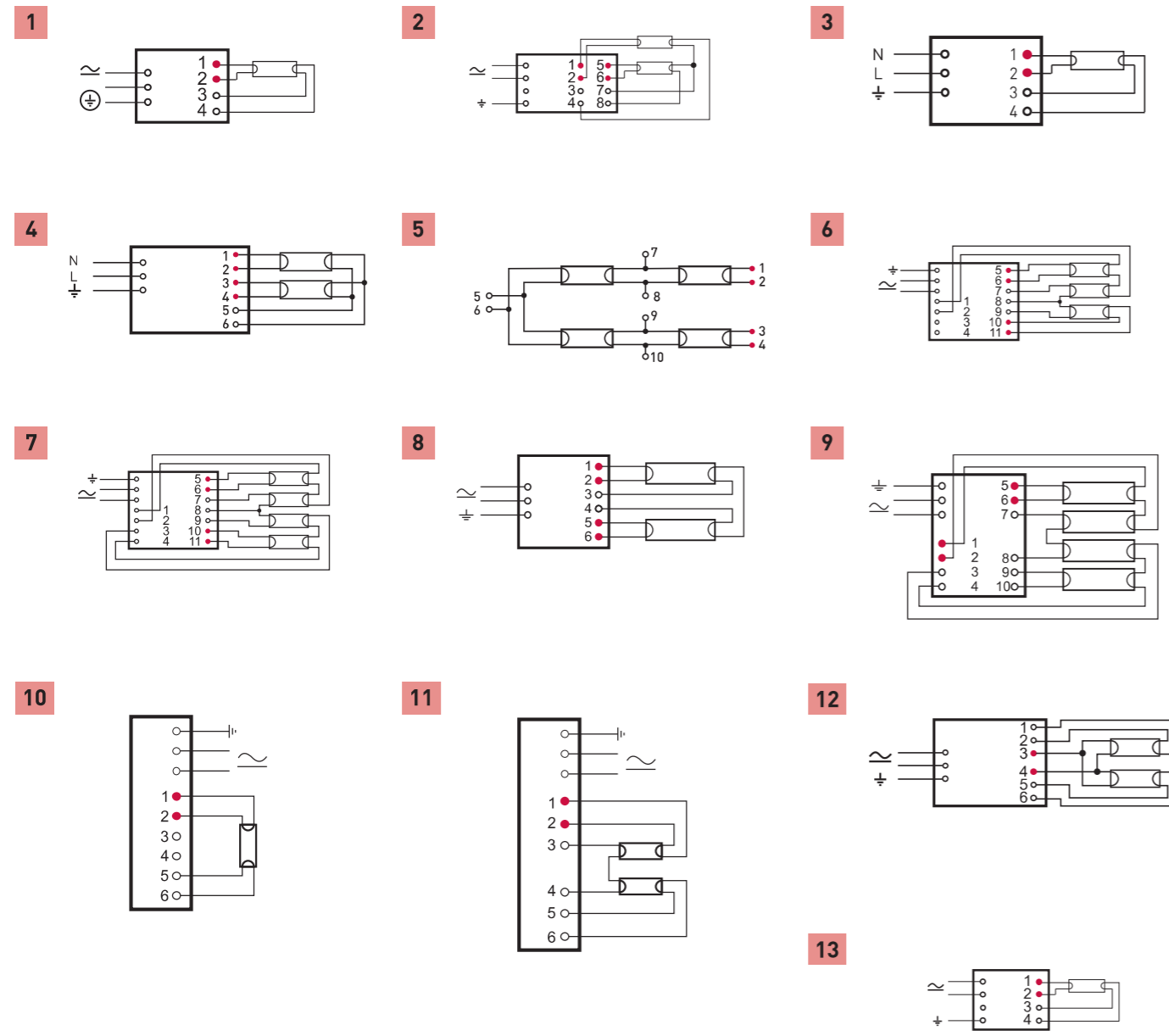
Delivery information

Ballast	Unit package		Transportation package		
	Minimum delivery amount	Carton Box	Pallet 820x1280 (pcs.)	Pallet weight (kg)	Pallet height (cm)
EL-TCs	60	●	1800	260	105



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 ³⁾	75 °C	75 °C ⁷⁾¹⁰⁾	75 °C	75 °C	70 °C
Ambient temperature range	-20...+50 °C	-20...+50 °C	-20...+50 °C ¹¹⁾	-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 ⁴⁾⁵⁾	198-264 VAC	198-264 VAC	198-264 VAC	198-264 VAC	220 - 240 VAC
DC range (starting voltage >190VDC)	176-280 VDC ⁵⁾	176-280 VDC	176-280 VDC	198-264 VDC ⁹⁾	176-280 VDC ¹¹⁾	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 (U _{out})	400 V	350 V ⁶⁾	400 V ⁶⁾	350 V ⁶⁾	250 V ²⁾	280 V ¹²⁾
Lifetime (90 % survival)	50 000 h, at t _c	60 000 h, at t _c	60 000 h, ⁸⁾ at t _c >100 000h, at Ta 50°C	50 000 h, at t _c	50 000 h, at t _c	30 000 h, at Tc 45 000 h, at Ta 50°C
Max length of ballast to lamp wiring	2 m	1.5 m	2 m	1.5 m	1 m / 2 m (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, U_{out} = 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 Ta 65 °C, for EL-ngn5-XL-types
- 12) U_{out} = 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 *	●	●	●	●	●	●
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