

## Electronic ballasts for compact fluorescent lamps

1



10-40 W 220-240 V, 50-60 Hz

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



**A2**

Lamp type	Wattage	No. of lamps	Ballast	EEL	Connection	Weight	Circuit power	Mains current	Power factor	Lamp power
					(p.18)	(g)	(W)	(A)		(W)
TC-L	18	1	EL1/2x18-42TCs	A2	11	132	17	0.08	0.94c	14.8
	18	1	EL1x18-42TCs	A2	13	125	17	0.08	0.94c	14.8
	18	2	EL1/2x18-42TCs	A2	12	132	32	0.14	0.97	14.8
	24	1	EL1/2x18-42TCs	A2	11	132	26	0.12	0.95	23
	24	1	EL1x18-42TCs	A2	13	125	26	0.12	0.95	23
	24	2	EL1/2x18-42TCs	A2	12	132	48	0.21	0.98	22.3
	36	1	EL1/2x36/38TCs	A2 BAT	11	132	37	0.17	0.96	34
	36	1	EL1x18-42TCs <sup>1)2)</sup>	A2	13	125	31	0.14	0.96	28
	36	1	EL1/2x18-42TCs <sup>1)2)</sup>	A2	12	132	31	0.14	0.96	28
	36	2	EL1/2x36/38TCs	A2 BAT	12	132	72	0.32	0.97	33
TC-F	40	1	EL1/2x18-42TCs <sup>1)</sup>	A2	11	132	42	0.19	0.98	39
	40	1	EL1x18-42TCs	A2	13	125	42	0.19	0.98	39
	18	1	EL1/2x18-42TCs	A2	11	132	17	0.08	0.94c	14.8
	18	1	EL1x18-42TCs	A2	13	125	17	0.08	0.94c	14.8
	18	2	EL1/2x18-42TCs	A2	12	132	32	0.14	0.97	14.8
	24	1	EL1/2x18-42TCs	A2	11	132	26	0.12	0.95	23
	24	1	EL1x18-42TCs	A2	13	125	26	0.12	0.95	23
	24	2	EL1/2x18-42TCs	A2	12	132	48	0.21	0.98	22.3
	36	1	EL1/2x36/38TCs	A2 BAT	11	132	37	0.17	0.96	34
	36	1	EL1/2x18-42TCs <sup>1)2)</sup>	A2	12	132	31	0.14	0.96	28
36	2	EL1/2x36/38TCs	A2 BAT	12	132	72	0.32	0.97	33	

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

1) Tested and recommended by Helvar, not ENEC approved

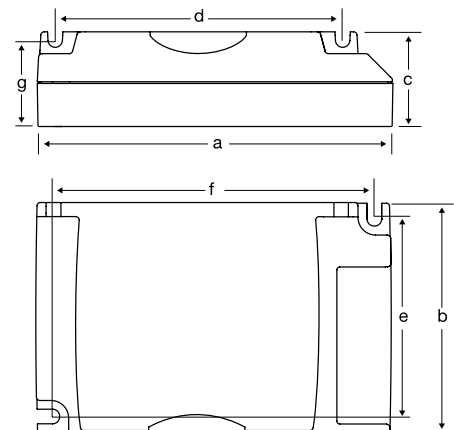
2) Light output 93 %

### 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



## Electronic ballasts for compact fluorescent lamps



**10-40 W 220-240 V, 50-60 Hz**

1

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



**A2**

Lamp type	Wattage	No. of lamps	Ballast	EEL	Connection	Weight	Circuit power	Mains current	Power factor	Lamp power
					(p.18)	(g)	(W)	(A)		(W)
<b>TC-DD</b>	10	1	EL1/2x9-13TCs	A2	11	118	12	0.05	0.91c	10.0
	16	1	EL1/2x9-13TCs	A2	11	118	17	0.08	0.95	15
	21	1	EL1/2x18-42TCs <sup>1)</sup>	A2	11	132	25	0.11	0.97	22.3
	28	1	EL1/2x18-42TCs	A2	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
	38	2	EL1/2x36/38TCs	A2 BAT	12	132	74	0.32	0.97	34
<b>T5c</b>	22	1	EL1/2x18-42TCs	A2	11	132	25	0.12	0.95	22.6
	22	1	EL1x18-42TCs	A2	13	125	25	0.12	0.95	22.6
	40	1	EL1/2x18-42TCs	A2	11	132	41	0.19	0.98	38.6
	40	1	EL1x18-42TCs	A2	11	125	41	0.19	0.98	38.6
<b>T5</b>	14	1	EL1/2x9-13TCs <sup>1)</sup>	A2	11	118	16	0.07	0.95	14.7
	21	1	EL1/2x9-13TCs <sup>1)</sup>	A2	11	118	22.5	0.10	0.97	21
	28	1	EL1/2x9-13TCs <sup>1)</sup>	A2	11	118	31	0.14	0.97	28.2
<b>T8</b>	30	2	EL2x32/42TCs <sup>1)</sup>	A2	11	132	57.5	0.25	0.97	26.6
<b>TC-SE</b>	9	1	EL1/2x9-13TCs	A2	11	118	10	0.05	0.9c	8.5
	9	1	EL1x9-13TCs	A2	13	110	10	0.05	0.9c	8.5
	9	2	EL1/2x9-13TCs	A2	12	118	18	0.08	0.96	8.5
	11	1	EL1/2x9-13TCs	A2	11	118	14	0.07	0.93c	12.8
	11	1	EL1x9-13TCs	A2	13	110	14	0.07	0.93c	12.8
	11	2	EL1/2x9-13TCs	A2	12	118	27	0.12	0.98	12.9

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

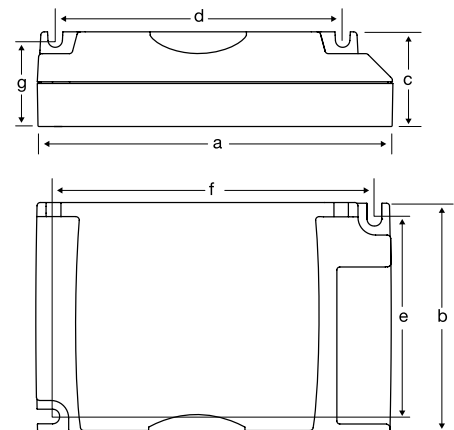
1) Tested and recommended by Helvar, not ENEC approved

### 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



## Electronic ballasts for compact fluorescent lamps

1



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

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



**A2**

Lamp type	Wattage	No. of lamps	Ballast	EEL	Connection	Weight	Circuit power	Mains current	Power factor	Lamp power
					(p.18)	(g)	(W)	(A)		(W)
TC-DE	10	1	EL1/2x9-13TCs	A2	11	118	10	0.05	0.9c	8.9
	10	1	EL1x9-13TCs	A2	13	110	10	0.05	0.9c	8.9
	10	2	EL1/2x9-13TCs	A2	12	118	20	0.09	0.97	8.9
	13	1	EL1/2x9-13TCs	A2	11	118	15	0.07	0.94c	13.8
	13	1	EL1x9-13TCs	A2	13	110	15	0.07	0.94c	13.8
	13	2	EL1/2x9-13TCs	A2	12	118	28	0.13	0.98	13.5
	18	1	EL1/2x18TCs	A2	11	120	19	0.09	0.96	16.9
	18	1	EL1x18TCs	A2	13	113	19	0.09	0.96	16.9
	18	2	EL1/2x18TCs	A2	12	120	36	0.16	0.98	16.9
	26	1	EL1/2x18-42TCs	A2	11	132	27	0.13	0.96	24.7
	26	1	EL1x18-42TCs	A2	13	125	27	0.13	0.96	24.7
	26	2	EL1/2x18-42TCs	A2	12	132	51	0.23	0.98	23.8
	26	2	EL2x32/42TCs	A2	12	132	53	0.24	0.97	24
	PL-R	14	1	EL1/2x14/17TCs <sup>1)</sup>	A2 BAT	11	131	18	0.08	0.92c
14		1	EL1x14/17TCs <sup>1)</sup>	A2 BAT	13	126	18	0.08	0.92c	15.8
14		2	EL1/2x14/17TCs <sup>1)</sup>	A2 BAT	12	131	34	0.15	0.96	15.5
17		1	EL1/2x14/17TCs <sup>1)</sup>	A2 BAT	11	131	21.5	0.1	0.93c	19.3
17		1	EL1x14/17TCs <sup>1)</sup>	A2 BAT	13	126	21.5	0.1	0.93c	19.3
17		2	EL1/2x14/17TCs	A2 BAT	12	131	41	0.18	0.96	18.6

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

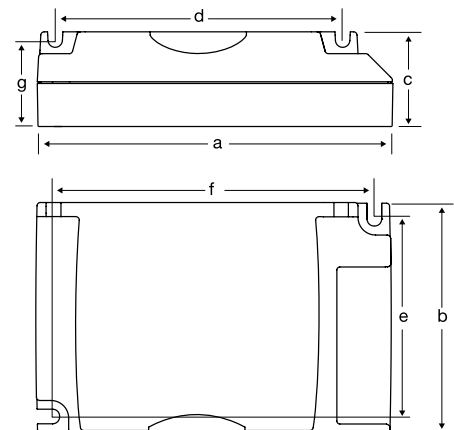
**Note:** See pages 18-19 for connection diagrams and additional characteristics.

### 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



## Electronic ballasts for compact fluorescent lamps



**13-57 W 220-240 V, 50-60 Hz**

1

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



**A2**

Lamp type	Wattage	No. of lamps	Ballast	EEL	Connection	Weight	Circuit power	Mains current	Power factor	Lamp power
					(p.18)	(g)	(W)	(A)		(W)
TC-TE	13	1	EL1/2x9-13TCs	A2	11	118	15	0.07	0.94c	13.8
	13	1	EL1x9-13TCs	A2	13	110	15	0.07	0.94c	13.8
	13	2	EL1/2x9-13TCs	A2	12	118	28	0.13	0.98	13.5
	18	1	EL1/2x18TCs	A2	11	120	19	0.09	0.96	16.9
	18	1	EL1x18TCs	A2	13	113	19	0.09	0.96	16.9
	18	2	EL1/2x18TCs	A2	12	120	36	0.16	0.98	16.9
	26	1	EL1/2x18-42TCs	A2	11	131	27	0.13	0.96	24.7
	26	1	EL1x18-42TCs	A2	13	125	27	0.13	0.96	24.7
	26	2	EL1/2x18-42TCs	A2	12	131	51	0.23	0.98	23.8
	26	2	EL2x32/42TCs	A2	12	131	53	0.24	0.97	24
	32	1	EL1/2x18-42TCs	A2	11	131	32	0.15	0.97	29.4
	32	1	EL1x18-42TCs	A2	13	125	32	0.15	0.97	29.4
	32	2	EL2x32/42TCs	A2	12	131	64	0.29	0.98	28.5
	42	1	EL1/2x18-42TCs	A2	11	131	44	0.2	0.98	42.2
	42	1	EL1x18-42TCs	A2	13	125	44	0.2	0.98	42.2
	42	2	EL2x32/42TCs	A2	12	131	85	0.38	0.98	40.5
	57	1	EL1/2x18-42TCs	A2	11	131	58.5	0.26	0.99	54
	57	1	EL1x18-42TCs	A2	13	125	58.5	0.26	0.99	54

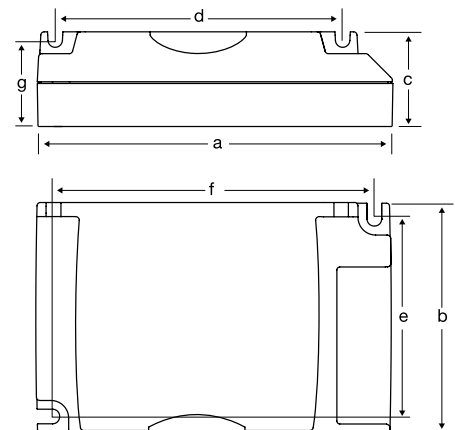
**Note:** See pages 18-19 for connection diagrams and additional characteristics.

### 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

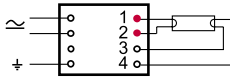


## Connection diagrams

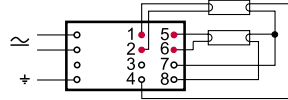
### 1 EL-s, EL-su, EL-ngn, EL-TCs

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

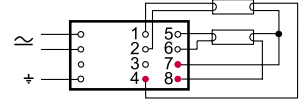
1



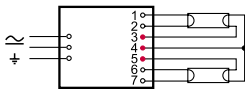
2



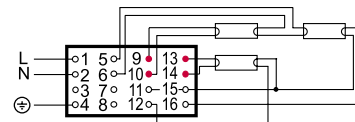
3



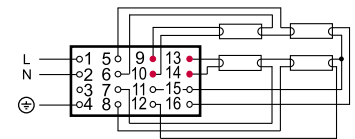
4



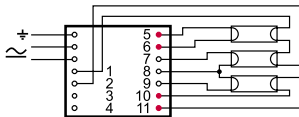
5



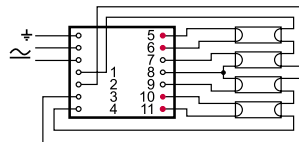
6



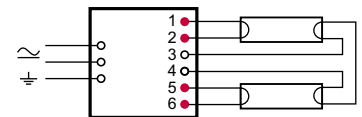
7



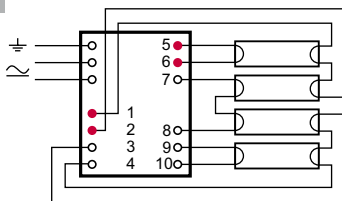
8



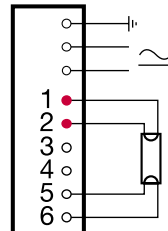
9



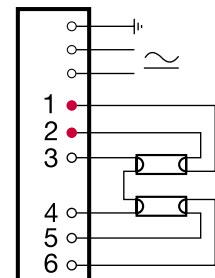
10



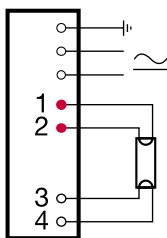
11



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

1

	EL-s / EL-su	EL-ngn	EL-TCs
Max.temperature at t <sub>c</sub> point	75 °C <sup>3) 4)</sup>	75 °C	75 °C
Ambient temperature range	-20...+50 °C <sup>7)</sup>	-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 <sup>5)6)</sup>	198-264 VAC	198-264 VAC
DC range (starting voltage >190VDC)	176-280 VDC <sup>6)</sup>	176-280 VDC	176-280 VDC <sup>1)</sup>
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 <sub>out</sub> )	400 V	350 V	250 V <sup>2)</sup>
Lifetime (90 % survival)	50 000 h, at t <sub>c</sub>	50 000 h, at t <sub>c</sub>	50 000 h, at t <sub>c</sub>
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<sub>c</sub> = 80 °C

4) For EL 2x70s, t<sub>c</sub> = 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<sub>a</sub> = >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