

Controllable (1-10 V) electronic ballasts for T5 fluorescent lamps



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

- Switch-Control / Analogue control <sup>1)</sup>
- Only 21 mm high
- Standard & Side mounting
- Dimming range 1-100 % <sup>2)</sup>
- Microprocessor controlled
- User friendly, quick release connectors
- Low energy consumption
- Stabilised, flickerfree light output



**A1**

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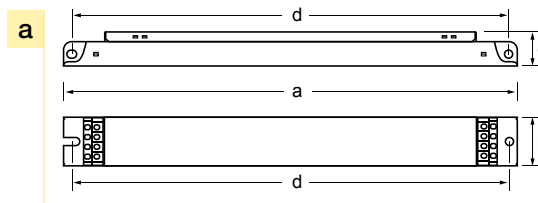
Lamp type	Wattage	No. of lamps	Ballast	EEL	Dimensions	Connection	Weight	Circuit power	Mains current	Lamp power
							(p.26)	(g)	(W)	(A)
	14	1	EL1x14sc	A1	1	1	270	17	0.08-0.07	13.7
	14	2	EL2x14sc	A1	2	2	340	31	0.15-0.14	13.7
	14	4	EL4x14sc <sup>2)</sup>	A1	2	3	340	62	0.29-0.27	13.7
	21	1	EL1x21sc	A1	1	1	270	24	0.11-0.10	20.7
	21	2	EL2x21sc	A1	2	2	340	46	0.22-0.20	20.7
	24	1	EL1x24sc	A1	1	1	270	26	0.13-0.12	22.5
	24	2	EL2x24sc	A1	2	2	340	50	0.24-0.20	22.5
	28	1	EL1x28sc	A1	1	1	270	31	0.15-0.14	27.8
	28	2	EL2x28sc	A1	2	2	340	64	0.30-0.28	27.8
	35	1	EL1x35sc	A1	1	1	270	39	0.18-0.17	34.7
	35	2	EL2x35sc	A1	2	2	340	78	0.36-0.34	34.7
	39	1	EL1x39sc	A1	1	1	270	42	0.20-0.18	38
	39	2	EL2x39sc	A1	2	2	340	83	0.40-0.36	38
	49	1	EL1x49sc	A1	1	1	270	55	0.25-0.23	49.3
	49	2	EL2x49sc	A1	2	2	340	106	0.50-0.46	49.3
	54	1	EL1x54sc	A1	1	1	270	61	0.28-0.26	53.8
54	2	EL2x54sc	A1	2	2	340	118	0.53-0.49	53.8	
80	1	EL1x80sc	A1	1	1	270	88	0.41-0.38	80	

**Note:** See pages 26-28 for connection diagrams and additional characteristics.

1) Simultaneous lighting control by Switch-Control and Analogue control

2) Dimming range 3-100 % for EL 4x14sc

Dimensions	1	2
Length 'a' (mm)	360	430
Width 'b' (mm)	30	30
Height 'c' (mm)	21	21
'd' (mm)	350	420



Delivery information					
Ballast	Unit package		Transportation package		
	Minimum delivery amount	Plastic binding strip	EUR pallet 1200 x 800 (pcs.)	Pallet weight (kg)	Pallet height (cm)
EL1 x sc	10	●	980	300	40
EL2 x sc	10	●	840	325	43
EL4 x sc	10	●	840	325	43

Controllable (1-10 V) electronic ballasts for T5-eco fluorescent lamps



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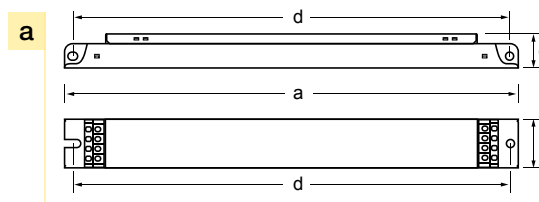
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Lamp type	Wattage	No. of lamps	Ballast	EEI	Dimensions	Connection	Weight	Circuit power <sup>3)</sup>	Mains current <sup>3)</sup>	Lamp power <sup>3)</sup>
						(p.26)	(g)	(W)	(A)	(W)
	14	1	EL1x14sc	A1	1	1	270	17.3-17.4	0.08	13.6-14.5
	14	2	EL2x14sc	A1	2	2	340	31.4-32.7	0.14	13.6-14.5
	14	4	EL4x14sc <sup>2)</sup>	A1	2	3	340	62.9-63	0.27	12.3-14.3
	24	1	EL1x24sc	A1	1	1	270	25.3	0.11	20.5-21.7
	24	2	EL2x24sc	A1	2	2	340	46.7	0.20	20.5-21.7
	28	1	EL1x28sc	A1	1	1	270	32.7	0.14	27.8-29.2
	28	2	EL2x28sc	A1	2	2	340	62	0.27	27.8-29.2
	35	1	EL1x35sc	A1	1	1	270	39.9	0.17	34.7-37.8
	35	2	EL2x35sc	A1	2	2	340	80.3	0.35	34.7-37.8
	49	1	EL1x49sc	A1	1	1	270	53.7	0.24	49.3-50.3
	49	2	EL2x49sc	A1	2	2	340	100.6-107.8	0.46-0.43	49.3-50.3
	54	1	EL1x54sc	A1	1	1	270	59.4-60.8	0.26	53.8-57
	54	2	EL2x54sc	A1	2	2	340	121.8-126.1	0.54-0.52	53.8-57
	80	1	EL1x80sc	A1	1	1	270	77-80	0.35-0.33	70.6-73.8

Note: See pages 26-28 for connection diagrams and additional characteristics.

- 1) Simultaneous lighting control by Switch-Control and Analogue control
- 2) Dimming range 3-100 % for EL 4x14sc
- 3) Depending on difference in lamps from various manufacturers

Dimensions	1	2
Length 'a' (mm)	360	430
Width 'b' (mm)	30	30
Height 'c' (mm)	21	21
'd' (mm)	350	420



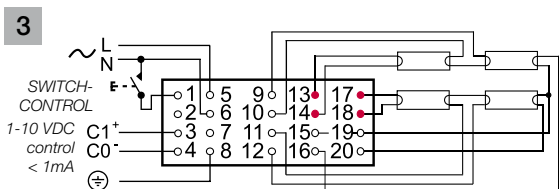
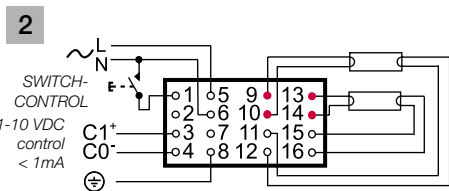
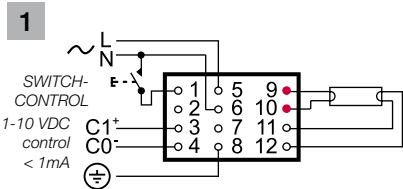
Delivery information					
Ballast	Unit package		Transportation package		
	Minimum delivery amount	Plastic binding strip	EUR pallet 1200 x 800 (pcs.)	Pallet weight (kg)	Pallet height (cm)
EL1 x sc	10	●	980	300	40
EL2 x sc	10	●	840	325	43
EL4 x sc	10	●	840	325	43

## Connection diagrams

### EL-sc

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

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- 1 EL1x ...sc
- 2 EL2x ...sc
- 3 EL4x ...sc

## Characteristics

	EL-sc
Max.temperature at t <sub>c</sub> point	80 °C
Ambient temperature range	+10...+50 °C <sup>1)</sup>
Storage temperature range	-40...+80 °C
Maximum relative humidity	no condensation
Number of starts per lamp	> 50 000
AC Range	198-264 VAC
DC range (starting voltage >190VDC)	176-280 VDC
Over voltage duration	320 VAC, 1 h
Power factor (at maximum), typical	0.98
Earth leakage current	< 0.4 mA
Maximum working voltage (U <sub>out</sub> )	400 V
Lifetime (90 % survival)	50 000 h, at 70 °C t <sub>c</sub>
Max length of ballast to lamp wiring	1.5 m/2 m (hot/cold) <sup>2)</sup>
Ignition time, typical	<1.3 s

1) To ensure stable operation of TC-L lamps in ambient temperatures below 18°C it is not recommended to dim the light level below 3 %

2) For TC-L lamps 1 m/2 m (hot/cold lamp wires)

## Standards

	EL-sc
General and safety requirements EN61347-2-3	●
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	●

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

## Switch-Control information, EL-sc ballasts

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Switch-Control provides ON/OFF switching and UP/DOWN dimming functionality from one or more simple switches. Switch-Control can be used together and simultaneously with other compatible control devices.

- EL-sc ballasts and analogue 1-10 V control.

### Suitable switch:

- Automatic return type. Mains rated (Mains is still present at the ballast terminals if the lamps are switched off from Switch-Control).
- The switch should withstand a short circuit current of:
  - 0.2 mA per ballast

### Connection:

- Between the Switch-Control input and N (or L).
- Wire length: 200 m maximum.
- Ballasts per switch: 50 (observe above).
- Ensure all ballasts and associated switches are connected to the same mains phase.

### Operation:

- **Switch off:** Short push of the switch (<0.4 second).
- **Switch on:** Short push of the switch (<0.4 second).
  - Re-strike within 3 seconds of switch off is prevented to ensure optimal lamp warm start.
  - EL-sc ballasts will switch on to the analogue control set level.
- **Dimming:** Long push of the switch (>0.5 second).
  - If lamps are off, the ballast dims up from minimum.
  - If lamps are on, the ballast dims in the opposite direction to previously.

### Regaining analogue control when Switch-Control is active:

- Dim the analogue control device from min. to max. and back to minimum within 1 second.

### Correction of out of sequence operation:

- Switch the mains supply off and on, or...
- Long push (until all lamps are on), then a short push (all lamps off), then wait 3 seconds and switch on (short push).

### Compatibility:

Some ballasts manufacturers have functionality similar to Helvar Switch-Control. In most cases these methods are NOT COMPATIBLE with each other.

### Connection

Between the Switch-Control input (pin1) and L (or N).

