

## Electronic ballasts for T8 fluorescent lamps

14-58 W 220-240 V, 50-60 Hz

- Energy saving
- Warm Start according to lamp standards
- Flickerless light
- Covers EMC requirements
- Low harmonics
- Low power losses
- Stabilized output



### 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)
T8	14	1	EL1x15ngn <sup>1)</sup>	A2	3	1	120	15	0.09-0.07	13
	15	1	EL1x15ngn <sup>1)</sup>	A2	3	1	120	15,5	0.09-0.07	13.5
	18	1	EL1x18ngn	A2	1	1	190	19	0.09-0.08	16
	18	2	EL2x18ngn	A2 BAT	1	8	200	37	0.16-0.15	16
	18	3	EL3/4x18ngn	A2	2	6	210	52	0.25-0.23	16
	18	4	EL3/4x18ngn	A2	2	7	210	69	0.33-0.30	16
	18	4	EL4x18ngn	A2 BAT	1	9	200	72	0.33-0.30	16
	30	1	EL1x30ngn <sup>1)</sup>	A2 BAT	3	1	120	26,5	0.14-0.11	24
	36	1	EL1x36ngn	A2	1	1	191	36	0.16-0.15	32
	36	2	EL2x36ngn	A2 BAT	1	8	205	71	0.32-0.29	32
	58	1	EL1x58ngn	A2	1	1	193	55	0.26-0.23	50
	58	2	EL2x58ngn	A2 BAT	1	8	218	108	0.50-0.45	50

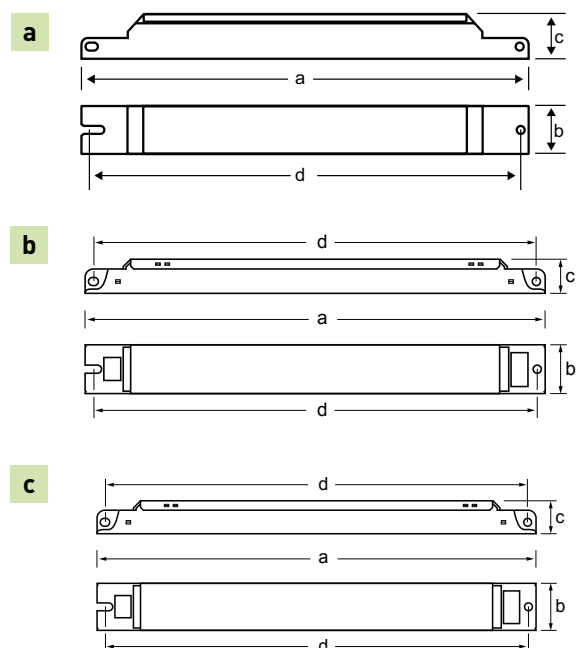
Note: See pages 31-32 for connection diagrams and additional characteristics.

1) ENEC and EMC approvals by request.

Dimensions	1	2	3
drawing	a	b	c
Length 'a' (mm)	280	280	190
Width 'b' (mm)	30	30	30
Height 'c' (mm)	28	21	21
'd' (mm)	270	270	180

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 ngn	10	●	1600	330	60
EL2 x ngn	10	●	1600	320-360	60
EL3/4x18ngn	10	●	1500	385	57
EL4 x ngn	10	●	1600	370	60

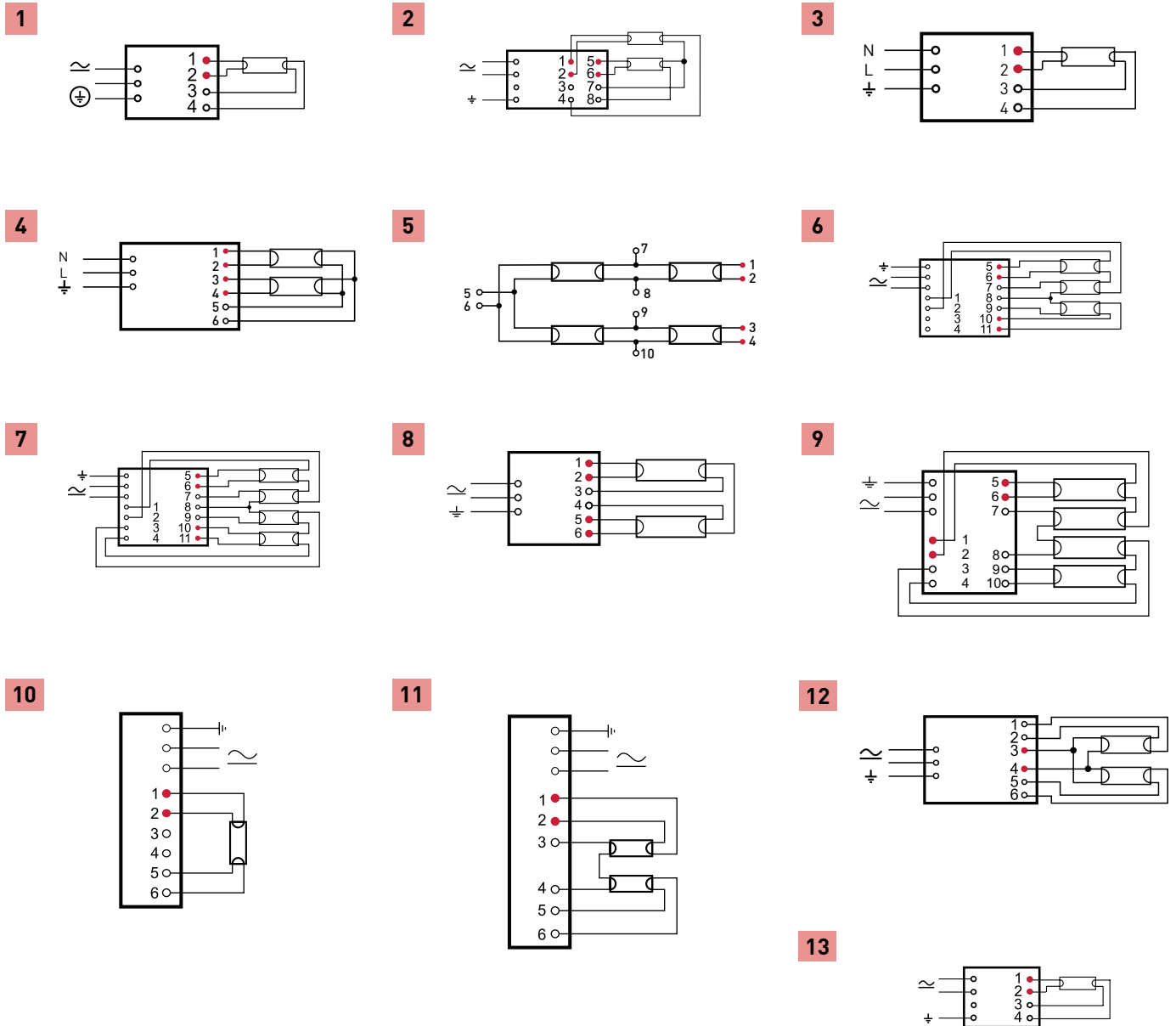
Note: Delivery information for EL1x15ngn and EL1x30ngn as on a page 21 for EL1 x ngn5



# 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 $t_c$ >100 000h, at $T_a$ 50°C	50 000 h, at $t_c$	50 000 h, at $t_c$	30 000 h, at $T_c$ 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 (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