

## Digital **DALI** electronic ballasts for T5 fluorescent lamps

freedom in lighting

- Digital DALI control
- Switch-Control \*
- Stand-by consumption 0.3 W
- Dimming range 1-100 % \*\*
- Only 21 mm high
- Microprocessor controlled
- Standard & sidemount possibilities
- User friendly, quick release connectors

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



### A1 BAT



| Lamp type | Wattage | No. of lamps | Ballast       | EEI    | Dimensions | Connection | Weight | Circuit power | Mains current | Lamp power |
|-----------|---------|--------------|---------------|--------|------------|------------|--------|---------------|---------------|------------|
|           |         |              |               |        |            | (p. 14)    | (g)    | (W)           | (A)           | (W)        |
| <b>T5</b> | 14      | 1            | EL1x14-35iDim | A1 BAT | 1          | 1          | 250    | 17            | 0.08-0.07     | 13.7       |
|           | 14      | 2            | EL2x14-35iDim | A1 BAT | 2          | 2          | 330    | 32.5          | 0.15-0.14     | 13.7       |
|           | 14      | 3            | EL3x14iDim    | A1 BAT | 2          | 3          | 310    | 47.5          | 0.22-0.20     | 13.7       |
|           | 14      | 4            | EL4x14iDim    | A1 BAT | 2          | 4          | 330    | 62            | 0.29-0.27     | 13.7       |
|           | 21      | 1            | EL1x14-35iDim | A1 BAT | 1          | 1          | 250    | 23.5          | 0.11-0.10     | 20.7       |
|           | 21      | 2            | EL2x14-35iDim | A1 BAT | 2          | 2          | 330    | 46            | 0.22-0.20     | 20.7       |
|           | 24      | 1            | EL1x24iDim    | A1 BAT | 1          | 1          | 250    | 25.5          | 0.12-0.10     | 22.5       |
|           | 24      | 2            | EL2x24iDim    | A1 BAT | 2          | 2          | 330    | 50.5          | 0.23-0.21     | 22.5       |
|           | 28      | 1            | EL1x14-35iDim | A1 BAT | 1          | 1          | 250    | 32            | 0.15-0.14     | 27.8       |
|           | 28      | 2            | EL2x14-35iDim | A1 BAT | 2          | 2          | 330    | 62            | 0.28-0.26     | 27.8       |
|           | 35      | 1            | EL1x14-35iDim | A1 BAT | 1          | 1          | 250    | 39            | 0.18-0.17     | 34.7       |
|           | 35      | 2            | EL2x14-35iDim | A1 BAT | 2          | 2          | 330    | 73.5          | 0.36-0.30     | 34.7       |
|           | 39      | 1            | EL1x39iDim    | A1 BAT | 1          | 1          | 250    | 42.5          | 0.20-0.18     | 38         |
|           | 39      | 2            | EL2x39iDim    | A1 BAT | 2          | 2          | 330    | 82.5          | 0.38-0.35     | 38         |
|           | 49      | 1            | EL1x49iDim    | A1 BAT | 1          | 1          | 250    | 55            | 0.25-0.23     | 49.3       |
|           | 49      | 2            | EL2x49iDim    | A1 BAT | 2          | 2          | 330    | 107.5         | 0.49-0.45     | 49.3       |
|           | 54      | 1            | EL1x54iDim    | A1 BAT | 1          | 1          | 250    | 59            | 0.27-0.25     | 53.8       |
|           | 54      | 2            | EL2x54iDim    | A1 BAT | 2          | 2          | 330    | 117           | 0.53-0.49     | 53.8       |
|           | 80      | 1            | EL1x80iDim    | A1 BAT | 1          | 1          | 250    | 86            | 0.39-0.36     | 80         |
|           | 80      | 2            | EL2x80iDim *  | A1 BAT | 2          | 2          | 365    | 170           | 0.78-0.70     | 80         |

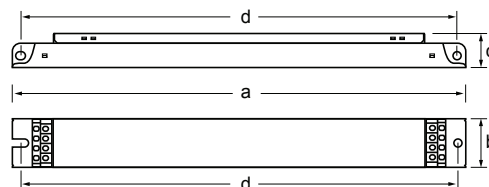
Note: See pages 14-17 for connection diagrams and additional characteristics.

\* No Switch-Control in EL2x80iDim

\*\* Dimming range 3-100 % for EL3x14iDim & EL4x14iDim

For information on compatibility with amalgam lamps, please contact your local Helvar representative.

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



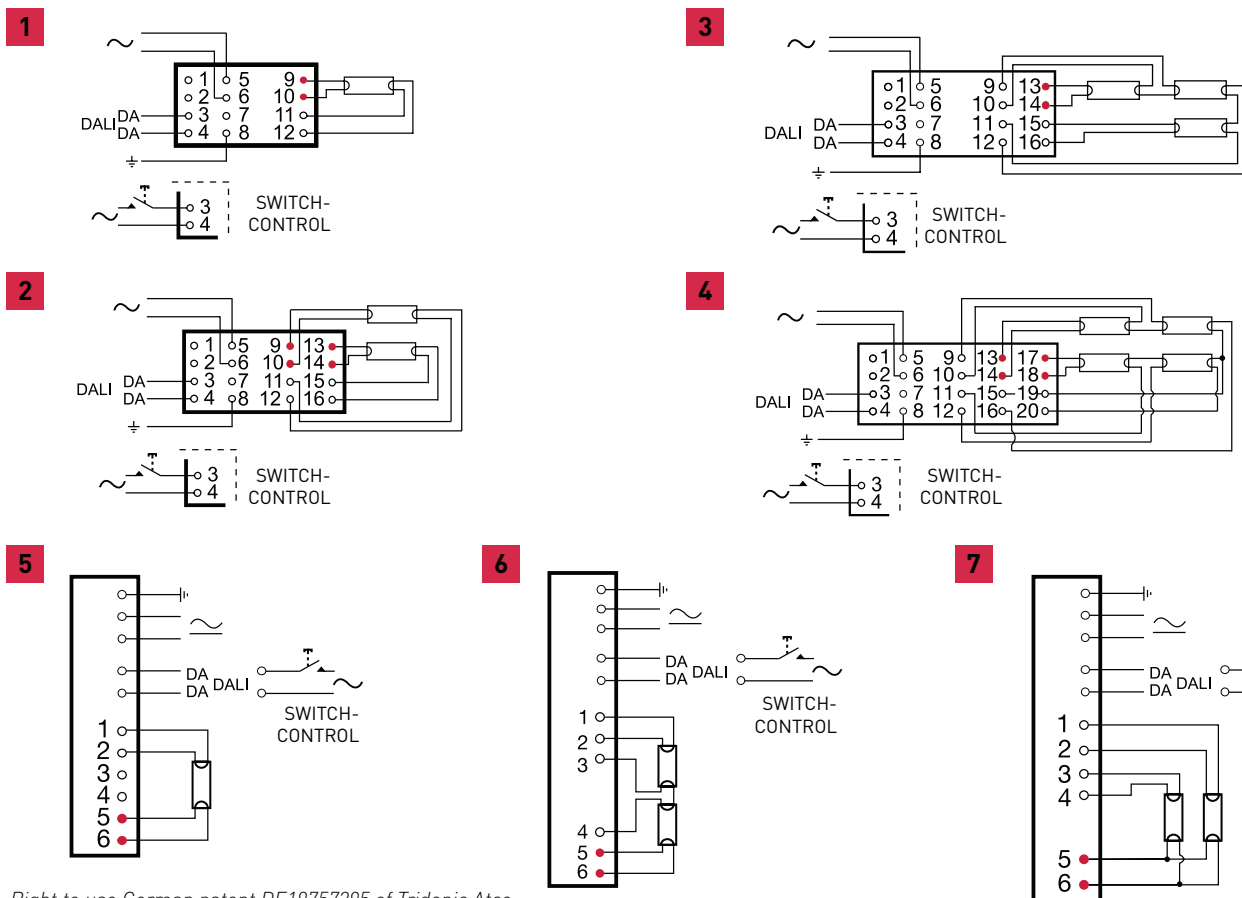
| Delivery information |                         |                       |                              |                    |                    |
|----------------------|-------------------------|-----------------------|------------------------------|--------------------|--------------------|
| Ballast              | Unit package            |                       | Transportation package       |                    |                    |
|                      | Minimum delivery amount | Plastic binding strip | EUR pallet 1200 x 800 (pcs.) | Pallet weight (kg) | Pallet height (cm) |
| EL1 x iDim           | 10                      | ●                     | 980                          | 300                | 40                 |
| EL2 x iDim           | 10                      | ●                     | 840                          | 325                | 43                 |
| EL3 x iDim           | 10                      | ●                     | 840                          | 325                | 43                 |
| EL4 x iDim           | 10                      | ●                     | 840                          | 325                | 43                 |

Right to use German patent DE19757295 of Tridonic Atco

# Connection diagrams

## EL-iDim

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

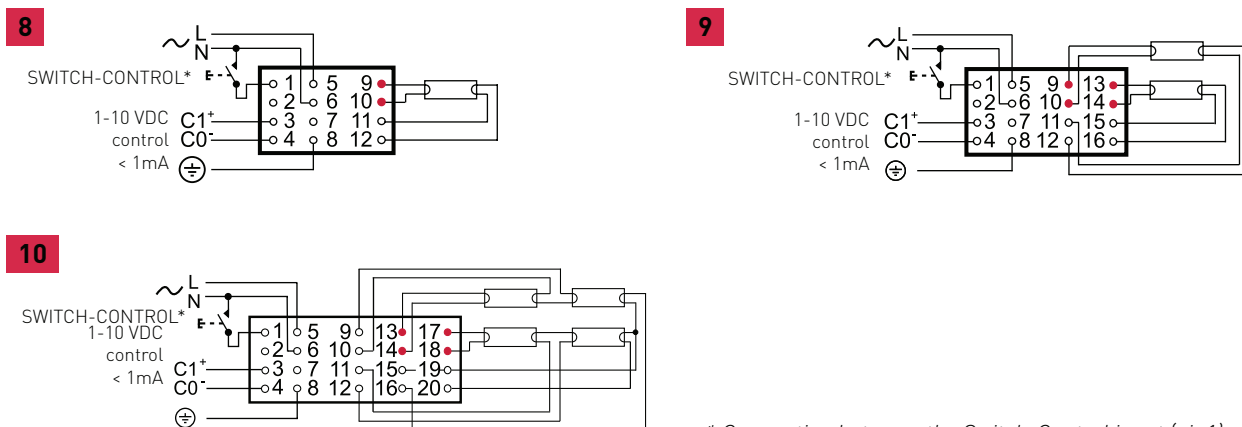


Right to use German patent DE19757295 of Tridonic Atco

|   |                 |
|---|-----------------|
| 1 | EL1x ...iDim    |
| 2 | EL2x ...iDim    |
| 3 | EL3x ...iDim    |
| 4 | EL4x ...iDim    |
| 5 | EL1/2x...iDim-c |
| 6 | EL1/2x...iDim-c |
| 7 | EL2x...iDim-c   |

## EL-sc

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



\* Connection between the Switch-Control input (pin 1) and N (or L).

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

|  | EL-iDim                                   | EL-iDim-c                            | EL-sc                              |
|--|---|--------------------------------------|------------------------------------|
| Max.temperature at $t_c$ point             | 75 °C <sup>3)</sup>                       | 75 °C                                | 80 °C                              |
| Ambient temperature range                  | +10...+50 °C <sup>1) 5) 6)</sup>          | +10...+50 °C <sup>5)</sup>           | +10...+50 °C <sup>1)</sup>         |
| 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                               | 198-264 VAC                          | 198-264 VAC                        |
| DC range (starting voltage >198VDC)        | 176-280 VDC                               | 176-280 VDC                          | 176-280 VDC                        |
| Over voltage duration                      | 320 VAC, 1h                               | 320 VAC, 1h                          | 320 VAC, 1 h                       |
| EBLF (Emergency Ballast Lumen Factor)      | N/A                                       | > 0.5 <sup>7)</sup>                  | N/A                                |
| BLF (Ballast Lumen Factor), steady state   | ~1  | ~1                                   | ~1                                 |
| Programmable light output for DC operation | yes                                       | yes                                  | N/A                                |
| Power factor (at maximum), typical         | 0.96                                      | 0.96                                 | 0.98                               |
| Earth leakage current                      | < 0.4 mA                                  | < 0.4 mA                             | < 0.4 mA                           |
| Maximum working voltage (Uout)             | 400 V                                     | 400 V                                | 400 V                              |
| Lifetime (90 % survival)                   | 50 000 h, at $t_c$                        | 50 000 h, at $t_c$                   | 50 000 h, at 70 °C $t_c$           |
| Max length of ballast to lamp wiring       | 1.5 m / 2 m (hot / cold) <sup>2) 4)</sup> | 1 m / 1 m (hot / cold) <sup>4)</sup> | 1.5 m/2 m (hot/cold) <sup>2)</sup> |
| Max length of DALI control wires           | 300 m <sup>9)</sup>                       | 300 m <sup>9)</sup>                  | N/A                                |
| Ignition time, typical                     | 1.0 s                                     | 1.0 s <sup>8)</sup>                  | <1.3 s                             |
| Type of starting                           | Preheat (warm start)                      | Preheat (warm start)                 | Preheat (warm start)               |

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)

3) For EL 3x14iDim,  $t_c = 65$  °C

4) Minimise lamp wire length variations in order to avoid imbalance in light output.

5) When using EL3x14iDim, EL4x14iDim and EL1/2x18/24iDim-c ballasts in ambient temperatures below 15 °C it is not recommended to dim the light level below 10 % to ensure stable lamp operation.

6) For EL2x80iDim, it is not recommended to dim the light below 5 % in temperatures below 15 °C

7) EL2x26-42iDim-c; EBLF > 0,3

8) EL1/2x18/24iDim-c ignition time = 1.4 s

9) Maximum allowed voltage drop is 2 V in 250 m wire

## Standards

|  | EL-iDim | EL-iDim-c | EL-sc |
|--|---------|-----------|-------|
| General and safety requirements EN61347-2-3  | ●       | ●         | ●     |
| Additional safety requirements for AC/DC supplied ballasts acc. to EN61347-2-3 Annex J | ●       | ●         | N/A   |
| 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  | ●       | ●         | ●     |
| Tested and proven compatible with DALI V1 (IEC62386, 2009)                             | ●       | ●         | N/A   |

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

Switch-Control provides ON/OFF switching and UP/DOWN dimming functionality from one or more simple switches. Switch-Control and DALI can not be connected to the iDim ballast at the same time.

**Suitable switch:**

- Automatic return type
- Mains rated

**Connection:**

- EL-iDim ballasts: To the DALI input
- Wire length: 25 m maximum, diagram A  
25 - 200 m, use a capacitor (1  $\mu$ F, 275 V), diagram B
- 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)
- EL-iDim ballasts will switch on to the last 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
  - The first dimming direction is dimming down

**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 switch on

**Compatibility:**

Some ballasts manufacturers have functionality similar to Helvar Switch-Control. These methods are NOT COMPATIBLE with each other.

## Power On to last level function from Switch-Control

Power On to last level function recalls the light level after mains break. Power On to last level operation sequence:

**Activation**

- Activation is started with the light switched ON using the following sequence.
  - 1 x long switch (20 - 25 s)
  - 3 x short switch (90 - 360 ms)
  - 1 x long switch (20 - 25 s)
 Between the switches, approximately 2 seconds of delay is allowed.

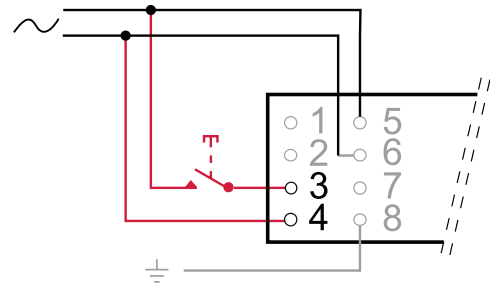
**Deactivation**

- Deactivation is started with the light switched OFF (standby) using the following sequence.
  - 1 x long switch (20 - 25 s)
  - 3 x short switch (90 - 360 ms)
  - 1 x long switch (20 - 25 s)
 Between the switches, approximately 2 seconds of delay is allowed.

**Connection**

- To the DALI input

**A) 0-25 m**



**B) 25-200 m**

