

# BCD T5 Series

## 1-10V dimmable electronic control gear units for T5 Lamps



### Performance characteristics

- Dimming interface: 1–10 V
- Dimming range 1...100% luminous flux
- Construction height just 21 mm
- Electrode preserving warm start for maximum lamp life, even at increased switching frequency; starting time < 1.5 s
- Over Voltage Protected: 320 VAC 48 h/ 350 VAC 2 h
- Multipower- Technology: Suitable for operation of different lamps and wattages with same ECG
- Automatic restart after lamp replacement
- Safety switch-off in case of abnormal lamp operation, e.g. defective electrode and end of lamp life; tested acc. to EN 61347-2-3
- Certified as thermally protected ballasts, e.g. for application in  $\nabla$ -luminaires
- Suitable for direct current operation and application in emergency lighting installations : Conforms to requirements for emergency lighting acc. to EN 61347-2-3/J
- Nominal service life: 50,000 h with failure rate  $\leq 10\%$  and operation at  $t_c = t_{c, max}$
- Energy efficiency index EEL=A1
- Conformance with international regulations regarding safety and operation, electromagnetic compatibility and immunity to interference

### ECG model

| Version                   | Order no.       | Lamp     |      |
|---------------------------|-----------------|----------|------|
| BCD35.1F-01/220-240/1-10V | <b>10097244</b> | 1 x T5   | 14 W |
|                           |                 | 1 x T5   | 21 W |
|                           |                 | 1 x T5   | 28 W |
|                           |                 | 1 x T5   | 35 W |
| BCD39.1F-01/220-240/1-10V | <b>10097246</b> | 1 x T5   | 24 W |
|                           |                 | 1 x T5   | 39 W |
| BCD49.1F-01/220-240/1-10V | <b>10097247</b> | 1 x T5   | 49 W |
| BCD54.1F-01/220-240/1-10V | <b>10097248</b> | 1 x T5   | 54 W |
| BCD80.1F-01/220-240/1-10V | <b>10097249</b> | 1 x T5   | 80 W |
|                           |                 | 1 x TC-L | 80 W |
| BCD35.2F-01/220-240/1-10V | <b>10097294</b> | 2 x T5   | 14 W |
|                           |                 | 2 x T5   | 21 W |
|                           |                 | 2 x T5   | 28 W |
|                           |                 | 2 x T5   | 35 W |
| BCD39.2F-01/220-240/1-10V | <b>10097296</b> | 2 x T5   | 24 W |
|                           |                 | 2 x T5   | 39 W |
| BCD49.2F-01/220-240/1-10V | <b>10097297</b> | 2 x T5   | 49 W |
| BCD54.2F-01/220-240/1-10V | <b>10097298</b> | 2 x T5   | 54 W |
| BCD80.2F-01/220-240/1-10V | <b>10097299</b> | 2 x T5   | 80 W |
|                           |                 | 2 x TC-L | 80 W |
| BCD14.3F-01/220-240/1-10V | <b>10097281</b> | 3 x T5   | 14 W |
| BCD14.4F-01/220-240/1-10V | <b>10097291</b> | 4 x T5   | 14 W |

### Markings



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## 1-10V dimmable electronic control gear units for T5 Lamps

### Technical data

|                                            |                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------|
| <b>Mains voltage supply</b>                |                                                                       |
| Rated voltage range                        | 220 V – 240 V                                                         |
| Max. admissible voltage range (continuous) | 198 V – 254 V                                                         |
| Frequency                                  | 0, 50 Hz ... 60 Hz                                                    |
| <b>Battery operation</b>                   |                                                                       |
| Voltage range for continuous operation     | 176 VDC – 276 VDC <sup>1)</sup>                                       |
| BCD 80.1, BCD 80.2, BCD 14.3, BCD 14.4     | 176 VDC – 198 VDC for max. 2 h                                        |
| <b>Behaviour at mains overvoltage</b>      |                                                                       |
| Switch-off of the lamp(s) at               | approx. 320 VAC <sup>2)</sup>                                         |
| Overvoltage protection                     | 350 VAC / 2 h                                                         |
| 1-10V control current                      | < 0.2 mA / (typ. 0,15mA)                                              |
| Ignition time of the lamp                  | < 1.5 s                                                               |
| Dimming range                              | 1...100 % luminous flux                                               |
| Behaviour in case of defective lamp        | Switch-off of the lamp                                                |
| Automatic restart after lamp replacement   | yes                                                                   |
| Max. temperature at housing surface        | + 110 °C (acc. EN 61 347-2-3/C)                                       |
| Nominal service life:                      | 50,000 h with failure rate ≤ 10 % and operation at $t_c = t_{c, max}$ |
| <b>Lamp and mains terminals</b>            |                                                                       |
| Wire cross section                         |                                                                       |
| Push - in contact:                         | 0.5 mm <sup>2</sup> -1 mm <sup>2</sup> solid                          |
| IDC - contact:                             | 0.5 mm <sup>2</sup> solid<br>0.75 mm <sup>2</sup> stranded            |
| Wire stripping length                      | 8.0 mm <sup>2</sup> – 9.0 mm <sup>2</sup>                             |
| Lamp wire lengths                          | see "wiring diagrams"                                                 |

<sup>1)</sup> Reliable lamp ignition only for ≥ 198 VDC

<sup>2)</sup> Lamp restart after mains voltage interruption

### Admissible temperatures

| Version                   | Ambient (t <sub>a</sub> ) | Case (t <sub>c</sub> ) |
|---------------------------|---------------------------|------------------------|
| BCD35.1F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 75°C            |
| BCD39.1F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 70°C            |
| BCD49.1F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 70°C            |
| BCD54.1F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 70°C            |
| BCD80.1F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 70°C            |
| BCD35.2F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 75°C            |
| BCD39.2F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 70°C            |
| BCD49.2F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 70°C            |
| BCD54.2F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 75°C            |
| BCD80.2F-01/220-240/1-10V | + 5°C... + 55°C           | max. + 75°C            |
| BCD14.3F-01/220-240/1-10V | + 5°C... + 60°C           | max. + 75°C            |
| BCD14.4F-01/220-240/1-10V | + 5°C... + 60°C           | max. + 75°C            |

### Inrush current / Circuit breaker

| Version     | typ. I <sub>peak</sub> / Δt | No. of ECG at single-pole circuit breakers |      |      |           |
|-------------|-----------------------------|--------------------------------------------|------|------|-----------|
|             |                             | LS-Typ                                     | 10 A | 16 A | 20 A 25 A |
| BCD35.1F-01 | 16 A / 215 μs               | B                                          | 23   | 38   | 47 59     |
|             |                             | C                                          | 39   | 63   | 79 99     |
| BCD39.1F-01 | 16 A / 215 μs               | B                                          | 23   | 38   | 48 59     |
|             |                             | C                                          | 39   | 63   | 79 99     |
| BCD49.1F-01 | 18 A / 280 μs               | B                                          | 15   | 24   | 30 38     |
|             |                             | C                                          | 25   | 41   | 51 64     |
| BCD54.1F-01 | 18 A / 200 μs               | B                                          | 22   | 35   | 44 55     |
|             |                             | C                                          | 32   | 52   | 65 81     |
| BCD80.1F-01 | 33 A / 220 μs               | B                                          | 7    | 12   | 15 19     |
|             |                             | C                                          | 12   | 20   | 25 31     |
| BCD35.2F-01 | 29 A / 310 μs               | B                                          | 7    | 12   | 15 19     |
|             |                             | C                                          | 13   | 21   | 26 36     |
| BCD39.2F-01 | 33 A / 323 μs               | B                                          | 7    | 11   | 14 18     |
|             |                             | C                                          | 12   | 19   | 24 30     |
| BCD49.2F-01 | 33 A / 323 μs               | B                                          | 7    | 11   | 14 18     |
|             |                             | C                                          | 12   | 19   | 24 31     |
| BCD54.2F-01 | 32 A / 323 μs               | B                                          | 7    | 12   | 15 19     |
|             |                             | C                                          | 12   | 20   | 25 31     |
| BCD80.2F-01 | 41 A / 431 μs               | B                                          | 4    | 6    | 8 10      |
|             |                             | C                                          | 7    | 11   | 14 18     |
| BCD14.3F-01 | 30 A / 333 μs               | B                                          | 7    | 12   | 15 19     |
|             |                             | C                                          | 13   | 21   | 26 32     |
| BCD14.4F-01 | 30 A / 315 μs               | B                                          | 8    | 13   | 16 21     |
|             |                             | C                                          | 14   | 22   | 28 38     |

**BCD**  
T5  
Series**1-10V dimmable electronic control gear units  
for T5 Lamps****Operating data**

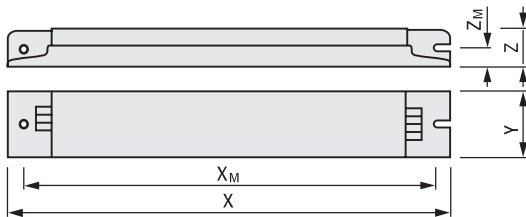
| Version                   | Lamp          | System rating | Input current* | Operating frequency | Power factor | Lamp power | EEI   | Approvals |
|---------------------------|---------------|---------------|----------------|---------------------|--------------|------------|-------|-----------|
|                           |               | W             | A              | kHz                 |              | W          |       |           |
| BCD35.1F-01/220-240/1-10V | 1 x T5 14 W   | 18            | 0.08           | 50...85             | 0.96         | 14         | A1BAT | a         |
|                           | 1 x T5 21 W   | 25            | 0.12           | 50...85             | 0.96         | 21         | A1BAT | a         |
|                           | 1 x T5 28 W   | 32            | 0.15           | 50...85             | 0.96         | 28         | A1BAT | a         |
|                           | 1 x T5 35 W   | 39            | 0.19           | 50...85             | 0.96         | 35         | A1BAT | a         |
| BCD39.1F-01/220-240/1-10V | 1 x T5 24 W   | 26            | 0.12           | 45...105            | 0.98         | 24         | A1BAT | a         |
|                           | 1 x T5 39 W   | 38,5          | 0.17           | 45...105            | 0.98         | 39         | A1BAT | a         |
| BCD49.1F-01/220-240/1-10V | 1 x T5 49 W   | 55            | 0.24           | 55...80             | 0.97         | 49         | A1BAT | a         |
| BCD54.1F-01/220-240/1-10V | 1 x T5 54 W   | 58            | 0.26           | 55...120            | 0.97         | 54         | A1BAT | a         |
| BCD80.1F-01/220-240/1-10V | 1 x T5 80 W   | 86            | 0.37           | 45...115            | 0.98         | 80         | A1BAT | a         |
|                           | 1 x TC-L 80 W | 86            | 0.37           | 45...115            | 0.98         | 80         | A1BAT | a         |
| BCD35.2F-01/220-240/1-10V | 2 x T5 14 W   | 34            | 0.15           | 45...90             | 0.97         | 14         | A1BAT | a         |
|                           | 2 x T5 21 W   | 48            | 0.21           | 45...90             | 0.97         | 21         | A1BAT | a         |
|                           | 2 x T5 28 W   | 64            | 0.28           | 45...90             | 0.97         | 28         | A1BAT | a         |
|                           | 2 x T5 35 W   | 78            | 0.35           | 45...90             | 0.97         | 35         | A1BAT | a         |
| BCD39.2F-01/220-240/1-10V | 2 x T5 24 W   | 53            | 0.23           | 40...110            | 0.97         | 24         | A1BAT | a         |
|                           | 2 x T5 39 W   | 78            | 0.34           | 40...110            | 0.97         | 39         | A1BAT | a         |
| BCD49.2F-01/220-240/1-10V | 2 x T5 49 W   | 106           | 0.47           | 50...90             | 0.98         | 49         | A1BAT | a         |
| BCD54.2F-01/220-240/1-10V | 2 x T5 54 W   | 115           | 0.51           | 40...145            | 0.97         | 54         | A1BAT | a         |
| BCD80.2F-01/220-240/1-10V | 2 x T5 80 W   | 172           | 0.75           | 45...120            | 0.97         | 80         | A1BAT | a         |
|                           | 2 x TC-L 80 W | 172           | 0.75           | 45...120            | 0.97         | 80         | A1BAT | a         |
| BCD14.3F-01/220-240/1-10V | 3 x T5 14 W   | 50            | 0.22           | 56...66             | 0.95         | 14         | A1BAT | a         |
| BCD14.4F-01/220-240/1-10V | 4 x T5 14 W   | 66            | 0.29           | 48...80             | 0.95         | 14         | A1BAT | a         |

\* at  $U_{Mains} = 230 \text{ VAC}$

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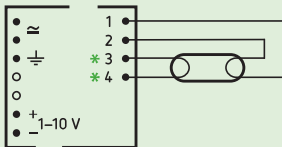
## 1-10V dimmable electronic control gear units for T5 Lamps

### Dimensions

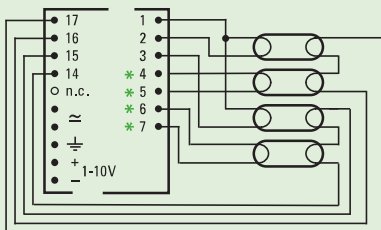
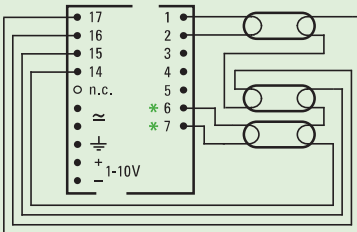
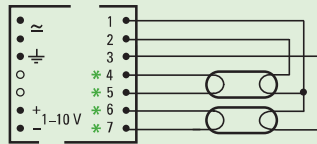


| Version     | X<br>mm | X <sub>M</sub><br>mm | Y<br>mm | Z<br>mm | Z <sub>M</sub><br>mm | Weight<br>kg |
|-------------|---------|----------------------|---------|---------|----------------------|--------------|
| BCD35.1F-01 | 360     | 350                  | 30      | 21      | 9                    | 0,26         |
| BCD39.1F-01 | 360     | 350                  | 30      | 21      | 9                    | 0,25         |
| BCD49.1F-01 | 360     | 350                  | 30      | 21      | 9                    | 0,26         |
| BCD54.1F-01 | 360     | 350                  | 30      | 21      | 9                    | 0,26         |
| BCD80.1F-01 | 360     | 350                  | 30      | 21      | 9                    | 0,26         |
| BCD35.2F-01 | 425     | 415                  | 30      | 21      | 9                    | 0,33         |
| BCD39.2F-01 | 425     | 415                  | 30      | 21      | 9                    | 0,33         |
| BCD49.2F-01 | 425     | 415                  | 30      | 21      | 9                    | 0,36         |
| BCD54.2F-01 | 425     | 415                  | 30      | 21      | 9                    | 0,33         |
| BCD80.2F-01 | 425     | 415                  | 30      | 21      | 9                    | 0,39         |
| BCD14.3F-01 | 360     | 350                  | 39      | 21      | 9                    | 0,32         |
| BCD14.4F-01 | 360     | 350                  | 39      | 21      | 9                    | 0,32         |

### Wiring diagrams



Keep wire pair 3-4 as short as possible (max. 0,5 m)  
Wire pair 1-2 max. 2m  
Pay attention to a symmetrical lamp wiring



Keep wire pairs 4-5 and 6-7 as short as possible (max. 0,5 m)  
Wire pairs 1-2, 1-3, 14-15, 16-17 max. 2m  
Pay attention to a symmetrical lamp wiring.

Max. allowed cable capacity:  
75 pF between each lamp line  
150 pF between each lamp line and earth  
Connection to the 1-10V interface by main rated cables (interface not in accordance with SELV)  
To ensure a smooth operation an earth connection should be fitted.

### Conformance with regulations

EN 61 347-1 General and safety requirements

EN 61 347-2-3

EN 61 347-2-3/C Requirements for thermally protected ballasts

EN 61347-2-3/J Particular additional safety requirements for a.c./d.c. supplied electronic ballasts for emergency lighting

EN 60 929 Performance requirements

EN 50 294 Measurement method of total input power of ballast-lamp circuits

EN 61 000-3-2 Limits for harmonic current emissions

EN 61 000-3-3 Limitation of voltage fluctuations and flicker

General EMC immunity:

EN 61 000-4-2 Electrostatic discharge

EN 61 000-4-3 Radiated, radio-frequency, electromagnetic field

EN 61 000-4-4 Electrical fast transient/burst

EN 61 000-4-5 Surge

EN 61 000-4-6 Conducted disturbances, induced by radio-frequency fields

EN 61 000-4-8 Power frequency magnetic field

EN 61 000-4-11 Voltage dips, short interruptions and voltage variations

EN 61 547 EMC immunity: equipment for general lighting purposes

EN 55 015 Radio disturbances, frequencies < 300MHz (CDN method)

Environmental tests for mechanical capacity:

IEC 60 068-2-6 Test Fc: vibrations (sinusoidal)

IEC 60 068-2-27 Test Ea: shock and bump

IEC 60 068-2-29 Test Eb: shock and bump

Quality management certified according to ISO 9001