

BCD

TC Twingle
Series

DALI dimmable electronic control gear units for compact fluorescent lamps in Twingle technology



Performance characteristics

- Twingle-Technology: Optional operation of 1 or 2 lamps
- Multipower: Operation of different lamps and wattages at the same ballast
- DALI Interface with advanced Overvoltage protection
- Push-Dim: Easy and reliable dimming and switching via standard push-button
- Dimming range 3...100 % luminous flux
- Electrode preserving warm start for maximum lamp life, even at increased switching frequency; starting time < 1.5 s
- Automatic restart after lamp replacement
- Automatic safety switch-off in case of abnormal lamp operation, e.g. defective electrodes and end of lamp life; tested acc. to EN 61347-2-3/A1 + Test 2
- Suitable for dimming of amalgam lamps
- High design flexibility thanks to reduced housing dimensions of all models
- Identical dimensions and connection to 1-10V and the non-dimmable electronic control gear units
- Suitable for direct current operation and application in emergency lighting installations : Conforms to requirements for emergency lighting acc. to EN 61347-2-3/J
- Conformance with international regulations regarding safety and operation, electromagnetic compatibility and immunity to interference
- Energy efficiency index EEI=A1

ECG model

Version	Order no.	Lamp
BCD18.1-2Q-01/220-240/DALI	10096395	1 x TC-DEL/-TEL 18 W
		2 x TC-DEL/-TEL 18 W
BCD57.1/32.2Q-01/220-240/DALI	10096397	1 x TC-DEL/-TEL 26 W
		1 x TC-TEL 32/42/57 W
		1 x T5C 22/40 W
		1 x TC-L/-F 18 W
		1 x TC-L/-F 24 W
		1 x TC-L 40 W
		1 x T5FQ 24/39 W
		1 x T8 15/18 W
		1 x T8 36/38 W
		2 x TC-DEL/-TEL 26 W
		2 x TC-TEL 32 W
		2 x TC-L/-F 18 W
		2 x TC-L/-F 24 W
		2 x T5C 22 W
		2 x T5C 40+22 W*
		2 x T5FQ 24 W
		2 x T8 15/18 W
		2 x T8 36W

* Min. dimming level 10 %
No continuous operation at dimming level ≤ 10 %

Markings



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Technical data

Mains voltage supply	
Rated voltage range	220 V – 240 V
Max. admissible voltage range (continuous)	198 V – 264 V
Frequency	0, 50 Hz ... 60 Hz
Battery operation	
Voltage range for continuous operation	198 VDC – 278 VDC
Lowest limiting value for temporary operation	176 VDC ¹⁾
Behaviour at mains overvoltage	
Switch-off of the lamp(s) at	approx. 320 VAC ²⁾
Overvoltage protection	350 VAC / 2 h
Leakage current	< 0.5 mA / EVG
Stand-by power	< 0.5 W
Ignition time of the lamp	< 1.5 s
Push-Dim operation	
Kind of signal	see connection diagramm
Dimming range	3...100 % luminous flux
Behaviour in case of defective lamp	Switch-off of the lamp
Behaviour in case of mains failure	see "Extended memory function"
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 $t_c = t_{c, max}$
Lamp and mains terminals	
Type	45°-connector with push button
Wire cross section	0.5 mm ² – 1.5 mm ²
Wire stripping length	7.5 mm ² – 8.5 mm ²
Lamp wire lengths	see "wiring diagrams"

¹⁾ Reliable lamp ignition only for ≥ 198 VDC

²⁾ Lamp restart after mains voltage interruption

Admissible temperatures

Version	Ambient (t_a)	Case (t_c)
BCD18.1-2Q; BCD57.1/32.2Q	+ 5 °C ... + 50 °C	max. + 75 °C

Inrush current / Circuit breaker

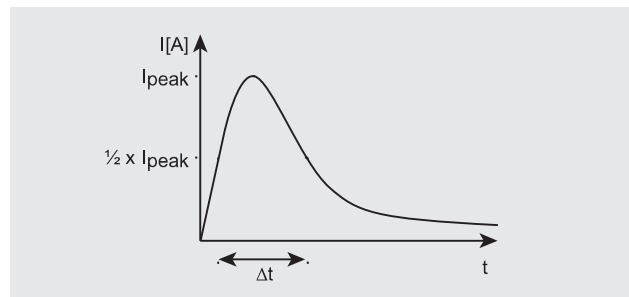
Version	typ. $I_{peak} / \Delta t$	No. of ECG at single-pole circuit breakers			
		LS-Typ	10 A	16 A	20 A 25 A
BCD18.1-2Q	13 A / 220 μ s	B	28	45	56 70
		C	47	75	94 117
BCD57.1/32.2Q	28 A / 225 μ s	B	12	20	25 32
		C	21	34	42 53

All data for $U_{supply} = 230$ VAC, mains impedance = 1 Ω

In case of multipolar CB the max. no. is reduced by 20 %

The max. number may differ depending on CB manufacturer. Please consider the specifications of the manufacturer.

Basically, CB with C-characteristics are recommended to be used in lighting groups.



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Operating data



Version	Lamp	System rating	Input current*	Operating frequency	Power factor	Lamp power	EEI	Approvals
		W	A	kHz		W		
BCD18.1-2Q-01/220-240/DALI	1 x TC-DEL/-TEL 18W	20	0.09	48...100	0.96	16	A1	a
	2 x TC-DEL/-TEL 18W	38	0.17	48...100	0.96	16	A1	a
BCD57.1/32.2Q-01/220-240/DALI	1 x T5C 22/40W	27.5/44	0.12/0.2	50...125	0.95	22/40	A1	a
	1 x T5FQ 24/39W	27.5/44	0.12/0.2	50...125	0.95	24/39	A1	a
	1 x T8 15/18W	18/20.5	0.08/0.09	50...125	0.92	14/16	A1	a
	1 x T8 36/38W	37	0.16	50...125	0.95	32	A1	a
	1 x TC-DEL/-TEL 26W	27.5	0.13	50...125	0.95	24	A1	a
	1 x TC-L/-F 18W	21	0.1	50...125	0.92	16	A1	a
	1 x TC-L/-F 24W	27	0.12	50...125	0.95	22	A1	a
	1 x TC-L 40W	45	0.2	50...125	0.95	40	A1	a
	1 x TC-TEL 32/42W	37/45	0.17/0.20	50...125	0.95	32/42	A1	a
	1 x TC-TEL 57W	63	0.29	50...125	0.95	57	A1	a
	2 x T5C 22W	53	0.24	50...125	0.95	22	A1	a
	2 x T5C 40+22W**	70	0.31	50...125	0.95	40+22	A1	a
	2 x T5FQ 24W	52	0.23	50...125	0.95	24	A1	a
	2 x T8 15/18W	34/38	0.15/0.17	50...125	0.95	14/16	A1	a
	2 x T8 36W	70	0.31	50...125	0.95	32	A1	a
	2 x TC-DEL/-TEL 26W	55	0.25	50...125	0.95	24	A1	a
	2 x TC-L/-F 18W	39	0.17	50...125	0.95	16	A1	a
	2 x TC-L/-F 24W	53	0.24	50...125	0.95	22	A1	a
	2 x TC-TEL 32W	70	0.32	50...125	0.95	32	A1	a

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

** Min. dimming level 10 %

No continuous operation at dimming level $\leq 10\%$

Push-Dim operation

A momentary push-button can also be used for dimming and switching instead of DALI interface.

Key press	Status: ECG switched off (stand-by)	Status: ECG switched on (lamp operation)
Short key press:	Switch-on the light at previous dimming level (memory function)	Switch-off the light and store dimming level
Long key press:	Switch-on the light at previous dimming level (memory function) and dim up resp. Down	Dimming up resp. down, every new key press inverts the dimming direction
Long key press (10 s):	—	Synchronisation mode (luminous flux: 100 %)
Long key press (20 s):	—	ECG changes to 1 % luminous flux. If the button is released extended "memory function" * will be enabled
Long key press (> 25 s):	—	ECG changes to 100 % luminous flux. If the button is released "extended memory function" * will be disabled

* Extended memory function

In the factory setting the extended memory function is disabled:

- After a mains voltage interruption, the device starts at 100 %.

The extended memory function can be enabled via push-button programming:

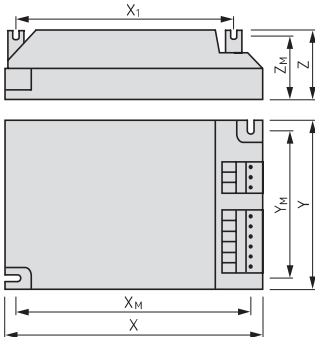
- After mains voltage interruption the ECG will start at last set state (standby or last dimming level)

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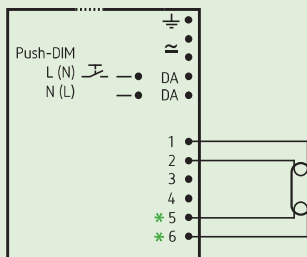
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Dimensions

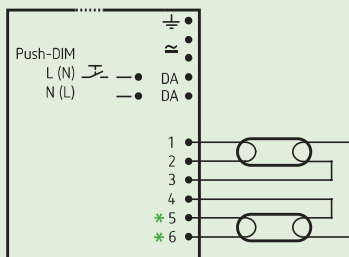


Version	X	XM	X1	Y	YM	Z	ZM	Weight
	mm	mm	mm	mm	mm	mm	mm	kg
BCD18.1-2Q	103	94	83	67	57	30	28	0.14
BCD57.1/32.2Q	103	94	83	67	57	30	28	0.16

Wiring diagrams



BCD TC Twingle 1-lp.



BCD TC Twingle 2-lp.

* keep lamp wires as short as possible

Cable capacity:
max. 75 pF between each lamp line
max. 65 pF between each lamp line and earth
To symmetrical wiring is to be paid attention

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 62 386-102 Digital addressable lighting interface – Part 102: General requirements – Control gear

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