

OPTOTRONIC® 4DIMLT2 Family

Application notes for DC-operation

The use of OPTOTRONIC® OUTDOOR LED drivers for central battery systems is quite new and limited to the 4DIM product family. For operation the following topics have to be considered.

- Permitted DC-Input voltage range: **176V – 276V DC**
- In DC operating mode **an additional external fuse** has to be installed in front of the LED-driver. The following fuse can be used for all 4DIMLT E LED drivers: 477 Series, 5x20 mm, Time-Lag (Slo-Blo®) Fuse, rating 3.15A. This fuse reduces the differential overvoltage protection to 2 kV. Using an additional overvoltage protection device can reestablish the initial surge protection of the LED driver. The asymmetric overvoltage protection level to earth is maintained.
- In DC operating mode the **output power** is automatically limited to **75 %** of the max. declared output power in AC operation. Using the Tuner4TRONIC® software, the output level in DC operation can be set. During DC operation, the DALI functions, the dimming modes and the “end of life” feature are deactivated.

The following system-combinations are permitted:

EATON	DALI module V-CG-SB 1	Line current monitoring ZB-S
INOTEC	DALI module DALI SV	Line current monitoring CP/SKE
GESSLER	DALI module LB1/009DD	
OT 40/120-277/1A0 4DIMLT E (ab IC: AA6427505DG) OT 60/170-240/1A0 4DIMLT E (ab IC: AA6748504DG) OT 90/170-240/1A0 4DIMLT E (ab IC: AA6640806DG) OT 165/170-240/1A0 4DIMLT E (ab IC: AA6748603DG)	<ul style="list-style-type: none"> • Compatible with external DC fuse • LED Driver has to be programmed to be in DALI mode only 	<ul style="list-style-type: none"> • Compatible with external DC fuse • In order to have a precise line current monitoring, max. 5 exterior luminaires should be connected per circuit.

The ON/OFF-modules of EATON V-CG-S or INOTEC J-SV are not compatible with the OT 4 DIM-family.

Remark:

For DC-operation mode please consider fulfilling the requirements acc. to IEC 60598-2-22 (standard for luminaires for emergency lighting) for your fitting.

The ordering of 4 DIM drivers for DC- operation must be done via IC (Ident Code). The LED-driver version can be identified on the 4 DIM driver label.



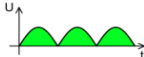
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Technical requirements for dimmable DALI control gears for fluorescent Lamps and LED

Manufacturer: OSRAM	Type / Description: OT 40/120-277/1A0 4DIMLT2 E (IC: AA6427505DG)
Project / Place: Marcel-Breuer-Straße 6, 80807 München	Project number:

Features	Techn.data / INOTEC requirements	Explanation	Fulfilled (Yes/No)
Voltage range AC	230V ± 10%	Voltage range in normal mains operation	Yes
Voltage range DC	186V - 260V	Possible voltage range in emergency operation	Yes
Control gear suitable for "Joker-Voltage"	B2-rectification of the AC voltage (without smoothing)	Pulsating DC voltage (highly folded half-wave) 	Yes
Control gear compatible with change-over time of the system ?	Change-over time: 150 - 1000ms	Typical change-over time of INOTEC systems between mains- and battery operation	Yes
Starting behavior of the control gear in DC operation	Stable current consumption within von 1,6s	Necessary for individual lamp monitoring	Yes
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 60929	AC and/or DC-supplied electronic control gear for tubular fluorescent lamps-Performance requirements	Not relevant
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 61347-2-3 (incl. Attachment J)	Particular requirements for AC and/or DC supplied electronic control gear for fluorescent lamps	Not relevant
Control gear complies with the standard: (only for LED)	DIN EN 62384	DC or AC supplied electronic control gear for LED modules-Performance requirements	Yes
Control gear complies with the standard: (only for LED)	DIN EN 61347-2-13	Lamp control gear-Part 2-13: Particular requirements for DC or AC supplied electronic control gear for LED modules	Yes
Control gear complies with the standard:	DIN EN 55015 (Measurement on AC and DC)	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment	Yes
Control gear complies with the standard:	DIN EN 61000-3-2	Electromagnetic compatibility (EMC) -Part 3-2:Limits- Limits for harmonic current emissions (equipment input current ≤ 16A per phase)	Yes
Control gear complies with the standard:	DIN EN 61547	Equipment for general lighting purposes - EMC immunity requirements	Yes
Control gear complies with the DALI-standard:	DIN EN 62386-101/-102/-207*1	Control gear must have the DALI logo	Yes

Note: VDE 0108 is not a standard for ECG, marking is not applicable

Features	Techn. data / INOTEC requirements	Explanation	manufacturer information
Rated current of the control gear with connected lamp in AC operation (230V)		Selection guide for the calculation of the max. number of luminaires per circuit	202,29 mA
Rated current of the control gear with connected lamp in DC operation (216V)		Selection guide for the calculation of the necessary battery capacity	227,73 mA
Behavior control gear in DC operation: -Unlocked light output level -Locked light output level (Dimming on DC)	The DC-light output settings on the DALI-SV-Module is only active if control gear is unlocked	In case of locked DC light output level, the DC level of the DALI-SV-Module is not active !	unlocked
Light output level in DC operation with locked light output level (Dimming on DC)	No control of light output level from DALI-SV-Module in DC operation possible	locked light output level in % Important for lighting design.	100%
Using the DALI command 146 (Query Lamp Failure) acc. IEC 62386 Part 102	According to IEC 62386 Part 102	Important for function test: To detect a lamp failure, the DALI-SV-Module send the DALI command query 146 to the DALI driver	Yes
Max. inrush current of the control gear with connected lamp in AC operation (230V)	Max. permitted inrush current per circuit: SK 4x2A: 250A / 500µs SK 2x4A: 250A / 500µs SK 2x3A: 250A / 500µs SK 1x6A: 250A / 500µs	Describes the max. inrush current of all ballasts in a circuit, to calculate the maximum contact rating of the circuit (*2)	45A / 180µs

Luminaires, which should work as emergency lighting, have to be in accordance with DIN EN 60598-2-22. (Particular requirements - Luminaires for emergency lighting)

*1: Control of DALI-SV-Module to the DALI driver is 100% done via DALI-commands according to IEC 62386-101/-102, so the DALI driver must sign with the DALI logo.

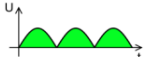
*2: For calculation the inrush current of the monitoring module must be considered !

Note: Special LED-driver for outdoor application, which has only an integrated AC rated fuse. **For DC-operation an additional external fuse is required.** For the DC operation a fixed output level could be set via the Tuner4TRONIC software.



Technical requirements for dimmable DALI control gears for fluorescent Lamps and LED

Manufacturer: OSRAM	Type / Description: OT 60/170-240/1A0 4DIMLT2 E (IC: AA6748504DG)
Project / Place: Marcel-Breuer-Straße 6, 80807 München	Project number:

Features	Techn.data / INOTEC requirements	Explanation	Fulfilled (Yes/No)
Voltage range AC	230V ± 10%	Voltage range in normal mains operation	Yes
Voltage range DC	186V - 260V	Possible voltage range in emergency operation	Yes
Control gear suitable for "Joker-Voltage"	B2-rectification of the AC voltage (without smoothing)	Pulsating DC voltage (highly folded half-wave) 	Yes
Control gear compatible with change-over time of the system ?	Change-over time: 150 - 1000ms	Typical change-over time of INOTEC systems between mains- and battery operation	Yes
Starting behavior of the control gear in DC operation	Stable current consumption within von 1,6s	Necessary for individual lamp monitoring	Yes
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 60929	AC and/or DC-supplied electronic control gear for tubular fluorescent lamps-Performance requirements	Not relevant
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 61347-2-3 (incl. Attachment J)	Particular requirements for AC and/or DC supplied electronic control gear for fluorescent lamps	Not relevant
Control gear complies with the standard: (only for LED)	DIN EN 62384	DC or AC supplied electronic control gear for LED modules-Performance requirements	Yes
Control gear complies with the standard: (only for LED)	DIN EN 61347-2-13	Lamp control gear-Part 2-13: Particular requirements for DC or AC supplied electronic control gear for LED modules	Yes
Control gear complies with the standard:	DIN EN 55015 (Measurement on AC and DC)	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similiar equipment	Yes
Control gear complies with the standard:	DIN EN 61000-3-2	Electromagnetic compatibility (EMC) -Part 3-2:Limits- Limits for harmonic current emissions (equipment input current ≤ 16A per phase)	Yes
Control gear complies with the standard:	DIN EN 61547	Equipment for general lighting purposes - EMC immunity requirements	Yes
Control gear complies with the DALI-standard:	DIN EN 62386-101/-102/-207*1	Control gear must have the DALI logo	Yes

Note: VDE 0108 is not a standard for ECG, marking is not applicable

Features	Techn. data / INOTEC requirements	Explanation	manufacturer information
Rated current of the control gear with connected lamp in AC operation (230V)		Selection guide for the calculation of the max. number of luminaires per circuit	292.37 mA
Rated current of the control gear with connected lamp in DC operation (216V)		Selection guide for the calculation of the necessary battery capacity	277.04 mA
Behavior control gear in DC operation: - Unlocked light output level - Locked light output level (Dimming on DC)	The DC-light output settings on the DALI-SV-Module is only active if control gear is unlocked	In case of locked DC light output level, the DC level of the DALI-SV-Module is not active !	unlocked
Light output level in DC operation with locked light output level (Dimming on DC)	No control of light output level from DALI-SV-Module in DC operation possible	locked light output level in % Important for lighting design.	100% ***)
Using the DALI command 146 (Query Lamp Failure) acc. IEC 62386 Part 102	According to IEC 62386 Part 102	Important for function test: To detect a lamp failure, the DALI-SV-Module send the DALI command query 146 to the DALI driver	Yes
Max. inrush current of the control gear with connected lamp in AC operation (230V)	Max. permitted inrush current per circuit: SK 4x2A: 250A / 500µs SK 2x4A: 250A / 500µs SK 2x3A: 250A / 500µs SK 1x6A: 250A / 500µs	Describes the max. inrush current of all ballasts in a circuit, to calculate the maximum contact rating of the circuit (*2)	53A / 200µs

Luminaires, which should work as emergency lighting, have to be in accordance with DIN EN 60598-2-22. (Particular requirements - Luminaires for emergency lighting)

*1: Control of DALI-SV-Module to the DALI driver is 100% done via DALI-commands according to IEC 62386-101/-102, so the DALI driver must sign with the DALI logo.

*2: For calculation the inrush current of the monitoring module must be considered !

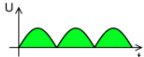
Note: Special LED-driver for outdoor application, which has only an integrated AC rated fuse. **For DC-operation an additional external fuse is required.** For the DC operation a fixed output level could be set via the Tuner4TRONIC software.

***) If the connect load is 75% of the maximum rated output power.



Technical requirements for dimmable DALI control gears for fluorescent Lamps and LED

Manufacturer: OSRAM	Type / Description: OT 90/170-240/1A0 4DIMLT2 E (IC: AA6640806DG)
Project / Place: Marcel-Breuer-Straße 6, 80807 München	Project number:

Features	Techn.data / INOTEC requirements	Explanation	Fulfilled (Yes/No)
Voltage range AC	230V ± 10%	Voltage range in normal mains operation	Yes
Voltage range DC	186V - 260V	Possible voltage range in emergency operation	Yes
Control gear suitable for "Joker-Voltage"	B2-rectification of the AC voltage (without smoothing)	Pulsating DC voltage (highly folded half-wave) 	Yes
Control gear compatible with change-over time of the system ?	Change-over time: 150 - 1000ms	Typical change-over time of INOTEC systems between mains- and battery operation	Yes
Starting behavior of the control gear in DC operation	Stable current consumption within von 1,6s	Necessary for individual lamp monitoring	Yes
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 60929	AC and/or DC-supplied electronic control gear for tubular fluorescent lamps-Performance requirements	Not relevant
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 61347-2-3 (incl. Attachment J)	Particular requirements for AC and/or DC supplied electronic control gear for fluorescent lamps	Not relevant
Control gear complies with the standard: (only for LED)	DIN EN 62384	DC or AC supplied electronic control gear for LED modules-Performance requirements	Yes
Control gear complies with the standard: (only for LED)	DIN EN 61347-2-13	Lamp control gear-Part 2-13: Particular requirements for DC or AC supplied electronic control gear for LED modules	Yes
Control gear complies with the standard:	DIN EN 55015 (Measurement on AC and DC)	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similiar equipment	Yes
Control gear complies with the standard:	DIN EN 61000-3-2	Electromagnetic compatibility (EMC) -Part 3-2:Limits- Limits for harmonic current emissions (equipment input current ≤ 16A per phase)	Yes
Control gear complies with the standard:	DIN EN 61547	Equipment for general lighting purposes - EMC immunity requirements	Yes
Control gear complies with the DALI-standard:	DIN EN 62386-101/-102/-207*1	Control gear must have the DALI logo	Yes

Note: VDE 0108 is not a standard for ECG, marking is not applicable

Features	Techn. data / INOTEC requirements	Explanation	manufacturer information
Rated current of the control gear with connected lamp in AC operation (230V)		Selection guide for the calculation of the max. number of luminaires per circuit	443.37 mA
Rated current of the control gear with connected lamp in DC operation (216V)		Selection guide for the calculation of the necessary battery capacity	388.88 mA
Behavior control gear in DC operation: - Unlocked light output level - Locked light output level (Dimming on DC)	The DC-light output settings on the DALI-SV-Module is only active if control gear is unlocked	In case of locked DC light output level, the DC level of the DALI-SV-Module is not active !	unlocked
Light output level in DC operation with locked light output level (Dimming on DC)	No control of light output level from DALI-SV-Module in DC operation possible	locked light output level in % Important for lighting design.	100% ***)
Using the DALI command 146 (Query Lamp Failure) acc. IEC 62386 Part 102	According to IEC 62386 Part 102	Important for function test: To detect a lamp failure, the DALI-SV-Module send the DALI command query 146 to the DALI driver	Yes
Max. inrush current of the control gear with connected lamp in AC operation (230V)	Max. permitted inrush current per circuit: SK 4x2A: 250A / 500µs SK 2x4A: 250A / 500µs SK 2x3A: 250A / 500µs SK 1x6A: 250A / 500µs	Describes the max. inrush current of all ballasts in a circuit, to calculate the maximum contact rating of the circuit (*2)	57A / 210µs

Luminaires, which should work as emergency lighting, have to be in accordance with DIN EN 60598-2-22. (Particular requirements - Luminaires for emergency lighting)

*1: Control of DALI-SV-Module to the DALI driver is 100% done via DALI-commands according to IEC 62386-101/-102, so the DALI driver must sign with the DALI logo.

*2: For calculation the inrush current of the monitoring module must be considered !

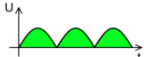
Note: Special LED-driver for outdoor application, which has only an integrated AC rated fuse. **For DC-operation an additional external fuse is required.** For the DC operation a fixed output level could be set via the Tuner4TRONIC software.

***) If the connect load is 75% of the maximum rated output power.



Technical requirements for dimmable DALI control gears for fluorescent Lamps and LED

Manufacturer: OSRAM	Type / Description: OT 165/170-240/1A0 4DIMLT2 E (IC: AA6748603DG)
Project / Place: Marcel-Breuer-Straße 6, 80807 München	Project number:

Features	Techn.data / INOTEC requirements	Explanation	Fulfilled (Yes/No)
Voltage range AC	230V ± 10%	Voltage range in normal mains operation	Yes
Voltage range DC	186V - 260V	Possible voltage range in emergency operation	Yes
Control gear suitable for "Joker-Voltage"	B2-rectification of the AC voltage (without smoothing)	Pulsating DC voltage (highly folded half-wave) 	Yes
Control gear compatible with change-over time of the system ?	Change-over time: 150 - 1000ms	Typical change-over time of INOTEC systems between mains- and battery operation	Yes
Starting behavior of the control gear in DC operation	Stable current consumption within von 1,6s	Necessary for individual lamp monitoring	Yes
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 60929	AC and/or DC-supplied electronic control gear for tubular fluorescent lamps-Performance requirements	Not relevant
Control gear complies with the standard: (only for fluorescent lamps)	DIN EN 61347-2-3 (incl. Attachment J)	Particular requirements for AC and/or DC supplied electronic control gear for fluorescent lamps	Not relevant
Control gear complies with the standard: (only for LED)	DIN EN 62384	DC or AC supplied electronic control gear for LED modules-Performance requirements	Yes
Control gear complies with the standard: (only for LED)	DIN EN 61347-2-13	Lamp control gear-Part 2-13: Particular requirements for DC or AC supplied electronic control gear for LED modules	Yes
Control gear complies with the standard:	DIN EN 55015 (Measurement on AC and DC)	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similiar equipment	Yes
Control gear complies with the standard:	DIN EN 61000-3-2	Electromagnetic compatibility (EMC) -Part 3-2:Limits- Limits for harmonic current emissions (equipment input current ≤ 16A per phase)	Yes
Control gear complies with the standard:	DIN EN 61547	Equipment for general lighting purposes - EMC immunity requirements	Yes
Control gear complies with the DALI-standard:	DIN EN 62386-101/-102/-207*1	Control gear must have the DALI logo	Yes

Note: VDE 0108 is not a standard for ECG, marking is not applicable

Features	Techn. data / INOTEC requirements	Explanation	manufacturer information
Rated current of the control gear with connected lamp in AC operation (230V)		Selection guide for the calculation of the max. number of luminaires per circuit	774 mA
Rated current of the control gear with connected lamp in DC operation (216V)		Selection guide for the calculation of the necessary battery capacity	674 mA
Behavior control gear in DC operation: -Unlocked light output level -Locked light output level (Dimming on DC)	The DC-light output settings on the DALI-SV-Module is only active if control gear is unlocked	In case of locked DC light output level, the DC level of the DALI-SV-Module is not active !	unlocked
Light output level in DC operation with locked light output level (Dimming on DC)	No control of light output level from DALI-SV-Module in DC operation possible	locked light output level in % Important for lighting design.	100% ***)
Using the DALI command 146 (Query Lamp Failure) acc. IEC 62386 Part 102	According to IEC 62386 Part 102	Important for function test: To detect a lamp failure, the DALI-SV-Module send the DALI command query 146 to the DALI driver	Yes
Max. inrush current of the control gear with connected lamp in AC operation (230V)	Max. permitted inrush current per circuit: SK 4x2A: 250A / 500µs SK 2x4A: 250A / 500µs SK 2x3A: 250A / 500µs SK 1x6A: 250A / 500µs	Describes the max. inrush current of all ballasts in a circuit, to calculate the maximum contact rating of the circuit (*2)	62A / 330µs

Luminaires, which should work as emergency lighting, have to be in accordance with DIN EN 60598-2-22. (Particular requirements - Luminaires for emergency lighting)

*1: Control of DALI-SV-Module to the DALI driver is 100% done via DALI-commands according to IEC 62386-101/-102, so the DALI driver must sign with the DALI logo.

*2: For calculation the inrush current of the monitoring module must be considered !

Note: Special LED-driver for outdoor application, which has only an integrated AC rated fuse. **For DC-operation an additional external fuse is required.** For the DC operation a fixed output level could be set via the Tuner4TRONIC software.

***) If the connect load is 75% of the maximum rated output power.