

OPTOTRONIC Outdoor

Constant current LED drivers with 4DIM/DALI



Areas of application

- Street and urban lighting
- Industry
- Suitable for outdoor applications in luminaires with IP > 54
- Suitable for use in outdoor luminaires of protection class I and II

Product benefits

- 4DIM functionality in one device (StepDIM, AstroDIM, MainsDIM, DALI)
- Very high efficiency and reliability
- High surge protection: up to 10 kV (1 pulse) / 8 kV, in protection class I or II
- Low luminous efficacy tolerance through low output current tolerance of $\pm 3\%$
- Great flexibility due to wide operating temperature range of $-40...55\text{ }^{\circ}\text{C}$ or $60\text{ }^{\circ}\text{C}$
- Protection through double isolation between mains input and LED output

Product features

- Available with different wattage: 40 W, 60 W, 90 W, 165 W
- Input voltage: 120...277 V (40 W), 220...240 V (60 W, 90 W, 165 W)
- Current output range: 70...1,050 mA
- Flexible current setting with one additional wire (LEDset2)
- AstroDIM for autonomous dimming with five independent levels (astro, time mode)
- Allows for energy saving in twilight phases
- MainsDIM function for dimming via reduction of line voltage amplitude
- Isolated DALI interface for bidirectional telemanagement systems
- Standby power consumption: < 0.5 W
- Constant lumen function
- Overtemperature protection via external NTC

Product family datasheet

Technical data

Electrical data

Product description	Nominal voltage	Input voltage AC	Nominal current	Mains frequency	Nominal input voltage (SD port)
OT 40/120...277/1A0 4DIMLT2 E	120...277 V	108...305 V ¹⁾	0.20 A ²⁾	50...60 Hz	220...277 V ³⁾
OT 60/170...240/1A0 4DIMLT2 E	220...240 V	170...264 V ¹⁾	0.30 A ¹³⁾	50...60 Hz	220...240 V ³⁾
OT 90/170...240/1A0 4DIMLT2 E	220...240 V	170...264 V ¹⁾	0.46 A ¹³⁾	50...60 Hz	220...240 V ³⁾
OT 165/170...240/1A0 4DIMLT2 E	220...240 V	170...264 V ¹⁾	0.78 A ¹³⁾	50...60 Hz	220...240 V ³⁾

Product description	Power factor λ	Total harmonic distortion	Device power loss	Inrush current	Max. ECG no. on circuit breaker 10 A (B)	Max. ECG no. on circuit breaker 16 A (B)
OT 40/120...277/1A0 4DIMLT2 E	0.95/0.90 ⁴⁾	10 %	6.5 W ⁵⁾	45 A ⁶⁾	10 ⁷⁾	17 ⁷⁾
OT 60/170...240/1A0 4DIMLT2 E	0.95/0.90 ⁴⁾	10 %	7.4 W ⁵⁾	53 A ¹⁴⁾	7 ⁷⁾	12 ⁷⁾
OT 90/170...240/1A0 4DIMLT2 E	0.95/0.90 ⁴⁾	10 %	9.6 W ⁵⁾	57 A ¹⁷⁾	7 ⁷⁾	12 ⁷⁾
OT 165/170...240/1A0 4DIMLT2 E	0.95/0.90 ⁴⁾	10 %	13 W ⁵⁾	62 A ¹⁹⁾	4 ⁷⁾	8 ⁷⁾

Product description	Max. ECG no. on circuit breaker 25 A (B)	Max. no. of ECGs on 16A MCB with EBN-OS	Surge capability (L/N-Ground)	Surge capability (L-N)
OT 40/120...277/1A0 4DIMLT2 E	28 ⁷⁾	45	10 kV ⁸⁾	6 kV ⁹⁾
OT 60/170...240/1A0 4DIMLT2 E	20 ⁷⁾	30	10 kV ⁸⁾	6 kV ⁹⁾
OT 90/170...240/1A0 4DIMLT2 E	20 ⁷⁾	30	10 kV ⁸⁾	6 kV ⁹⁾
OT 165/170...240/1A0 4DIMLT2 E	14 ⁷⁾	15	10 kV ⁸⁾	6 kV ⁹⁾

Product description	Surge capability (L/N - SD)	Surge capability (SD - Ground)	Nominal output power	ECG efficiency
OT 40/120...277/1A0 4DIMLT2 E	6 kV ⁹⁾	10 kV ⁸⁾	40 W ¹⁰⁾	88.5 % ¹¹⁾
OT 60/170...240/1A0 4DIMLT2 E	6 kV ⁹⁾	10 kV ⁸⁾	60 W ¹⁵⁾	90.5 % ¹¹⁾
OT 90/170...240/1A0 4DIMLT2 E	6 kV ⁹⁾	10 kV ⁸⁾	90 W ¹⁸⁾	91.5 % ¹¹⁾
OT 165/170...240/1A0 4DIMLT2 E	6 kV ⁹⁾	10 kV ⁸⁾	165 W ²⁰⁾	92 % ¹¹⁾

Product description	Nominal output voltage	U-OUT (working voltage)	Nominal output current	Output current tolerance	Output ripple current (100 Hz)
OT 40/120...277/1A0 4DIMLT2 E	15...56 V	60 V	350...1050 mA	±3 %	15 %
OT 60/170...240/1A0 4DIMLT2 E	30...115 V ¹⁶⁾	120 V	350...1050 mA	±3 %	15 %
OT 90/170...240/1A0 4DIMLT2 E	57...186 V	200 V	350...1050 mA	±3 %	15 %
OT 165/170...240/1A0 4DIMLT2 E	90...285 V ²¹⁾	300 V	350...1050 mA	±3 %	15 %

Product description	Minimum output current	Galvanic isolation
OT 40/120...277/1A0 4DIMLT2 E	70 mA ¹²⁾	SELV
OT 60/170...240/1A0 4DIMLT2 E	70 mA ¹²⁾	SELV
OT 90/170...240/1A0 4DIMLT2 E	70 mA ¹²⁾	double/reinforced
OT 165/170...240/1A0 4DIMLT2 E	120 mA ¹²⁾	double/reinforced

Product family datasheet

- 1) Permitted voltage range
- 2) At 230 V/0.41 A for 120 V_{AC}
- 3) In relation to N
- 4) Minimum/Full load at 230 V/Half load at 230 V
- 5) Maximum
- 6) $t_{width} = 180 \mu s$ (measured at 50 % I_{peak})
- 7) Type B
- 8) Single pulse 10kV / 12 Ohm (1.2/50 μs)
- 9) @ 2 Ohm, acc. to EN61547
- 10) Partial load 7...40 W
- 11) At full load and 230 V
- 12) Physical Minimum Dimming Current 70 mA
- 13) At 230 V
- 14) $t_{width} = 200 \mu s$ (measured at 50 % I_{peak})
- 15) Partial load 11...60 W
- 16) 35...115 V for output current >700 mA
- 17) $t_{width} = 210 \mu s$ (measured at 50 % I_{peak})
- 18) Partial load 20...90 W
- 19) $t_{width} = 330 \mu s$ (measured at 50 % I_{peak})
- 20) Partial load 32...165 W
- 21) 90...242 V for output current >680 mA

Dimensions & weight

Product description	Length	Width	Height	Mounting hole spacing, length	Mounting hole spacing, width	Product weight
OT 40/120...277/1A0 4DIMLT2 E	123.0 mm	79.0 mm	33.0 mm	111.0 mm	67.0 mm	260.00 g
OT 60/170...240/1A0 4DIMLT2 E	133.0 mm	77.0 mm	40.0 mm	122.5 mm	-	280.00 g
OT 90/170...240/1A0 4DIMLT2 E	133.0 mm	77.0 mm	40.0 mm	122.5 mm	-	340.00 g
OT 165/170...240/1A0 4DIMLT2 E	170.0 mm	100.0 mm	40.0 mm	160.0 mm	90.0 mm	1100.00 g

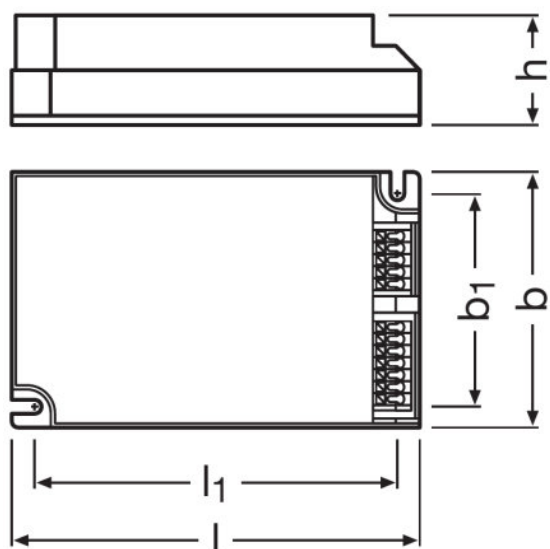
Product description	Cable cross-section, input side	Cable cross-section, output side	Wire preparation length, input side
OT 40/120...277/1A0 4DIMLT2 E	0.2...1.5 mm ^{2 1)}	0.2...1.5 mm ^{2 1)}	8.5...9.5 mm
OT 60/170...240/1A0 4DIMLT2 E	0.25...2.5 mm ^{2 1)}	0.2...1.5 mm ^{2 1)}	10...11 mm ²⁾
OT 90/170...240/1A0 4DIMLT2 E	0.25...2.5 mm ^{2 1)}	0.25...1.5 mm ^{2 1)}	10...11 mm ²⁾
OT 165/170...240/1A0 4DIMLT2 E	0.25...2.5 mm ^{2 1)}	0.2...1.5 mm ^{2 1)}	10...11 mm ²⁾

1) Flexible

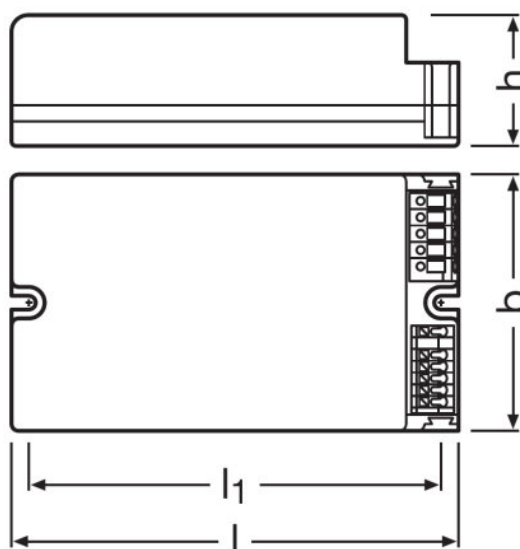
2) Equipotential pole 8.5...9.5

Product family datasheet

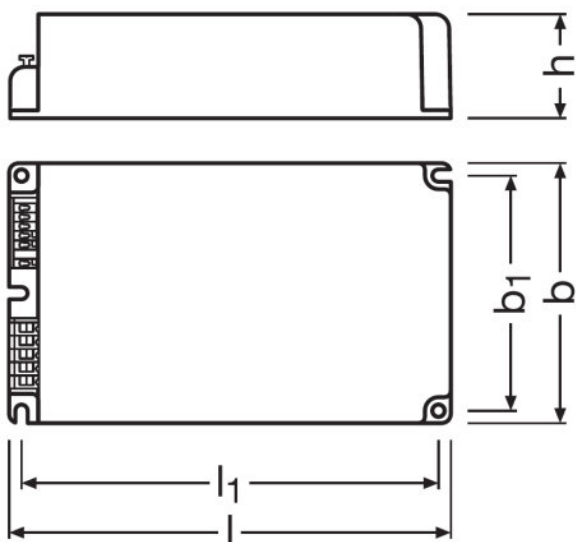
Product line drawing



OT 40/120...277/1A0 4DIMLT2 E



OT 60/170...240/1A0 4DIMLT2 E, OT 90/170...240/1A0 4DIMLT2 E



OT 165/170...240/1A0 4DIMLT2 E

Product family datasheet

Temperatures & operating conditions

Product description	Ambient temperature range	Maximum temperature at tc test point	Max.housing temperature in case of fault	Permitted rel. humidity during operation
OT 40/120...277/1A0 4DIMLT2 E	-40...+60 °C ¹⁾	80 °C ²⁾	120 °C	5...85 % ³⁾
OT 60/170...240/1A0 4DIMLT2 E	-40...+60 °C ⁴⁾	85 °C ²⁾	120 °C	5...85 % ³⁾
OT 90/170...240/1A0 4DIMLT2 E	-40...+55 °C	90 °C ²⁾	120 °C	5...85 % ³⁾
OT 165/170...240/1A0 4DIMLT2 E	-40...+55 °C	85 °C ²⁾	120 °C	5...85 % ³⁾

¹⁾ $T_a(\text{max}) = 55\text{ °C}$ for input voltage 120/277 V_{AC}

²⁾ Maximum at the Tc-point

³⁾ Non condensing, absolute humidity: 36g/m³

⁴⁾ $T_a(\text{max}) = 60\text{ °C}$ $I_{\text{out}} \leq 700\text{mA}$, $T_a(\text{max}) = 55\text{ °C}$ $I_{\text{out}} > 700\text{mA}$

Lifespan

Product description	ECG lifetime
OT 40/120...277/1A0 4DIMLT2 E	85000 h ¹⁾
OT 60/170...240/1A0 4DIMLT2 E	85000 h ²⁾
OT 90/170...240/1A0 4DIMLT2 E	85000 h ³⁾
OT 165/170...240/1A0 4DIMLT2 E	85000 h ²⁾

¹⁾ At $T_{\text{case}} = 70\text{ °C}$ at T_c point / 10% failure rate

²⁾ At $T_{\text{case}} = 75\text{ °C}$ at T_c point / 10% failure rate

³⁾ At $T_{\text{case}} = 80\text{ °C}$ at T_c point / 10% failure rate

Expected Lifetime

Product name				
OT 40/120...277/1A0 4DIMLT2 E	ECG ambient temperature [ta]	60	50	47
	Temperature at tc-point [°C]	80	70	67
	Lifetime [h]	50000 ¹⁾	85000 ¹⁾	100000 ¹⁾
OT 60/170...240/1A0 4DIMLT2 E	ECG ambient temperature [ta]	60	50	47
	Temperature at tc-point [°C]	85	75	72
	Lifetime [h]	50000 ²⁾	85000 ²⁾	100000 ²⁾
OT 90/170...240/1A0 4DIMLT2 E	ECG ambient temperature [ta]	55	45	42
	Temperature at tc-point [°C]	90	80	77
	Lifetime [h]	50000 ³⁾	85000 ³⁾	100000 ³⁾
OT 165/170...240/1A0 4DIMLT2 E	ECG ambient temperature [ta]	55	45	43
	Temperature at tc-point [°C]	85	75	72
	Lifetime [h]	50000 ⁴⁾	85000 ⁴⁾	100000 ⁴⁾

Product family datasheet

- 1) Max. 10% failure rate at tc max and input voltage 230 V_{AC}
 2) Max. 10% failure rate at tc max and input voltage 230 V_{AC}
 3) Max. 10% failure rate at tc max and input voltage 230 V_{AC}
 4) Max. 10% failure rate at tc max and input voltage 230 V_{AC}

Capabilities

Product description	Dimmable	Dimming interface	Dimming range	Suitable for fixtures with prot. class
OT 40/120...277/1A0 4DIMLT2 E	Yes	4DIM / DALI / StepDIM / AstroDIM / MainsDIM	10...100 % ¹⁾	I / II
OT 60/170...240/1A0 4DIMLT2 E	Yes	4DIM / DALI / StepDIM / AstroDIM / MainsDIM	10...100 % ¹⁾	I / II
OT 90/170...240/1A0 4DIMLT2 E	Yes	4DIM / DALI / StepDIM / AstroDIM / MainsDIM	10...100 % ¹⁾	I / II
OT 165/170...240/1A0 4DIMLT2 E	Yes	4DIM / DALI / StepDIM / AstroDIM / MainsDIM	17...100 % ¹⁾	I / II

Product description	Constant lumen function	NTC input	Overheating protection
OT 40/120...277/1A0 4DIMLT2 E	Programmable	Yes ²⁾	Automatic reversible
OT 60/170...240/1A0 4DIMLT2 E	Programmable	Yes ²⁾	Automatic reversible
OT 90/170...240/1A0 4DIMLT2 E	Programmable	Yes ²⁾	Automatic reversible
OT 165/170...240/1A0 4DIMLT2 E	Programmable	Yes ²⁾	Automatic reversible

Product description	Overload protection	Short-circuit protection	No-load proof	Max. cable length to lamp/LED module
OT 40/120...277/1A0 4DIMLT2 E	Automatic reversible	Automatic reversible	Yes	2.0 m
OT 60/170...240/1A0 4DIMLT2 E	Automatic reversible	Automatic reversible	Yes	2.0 m
OT 90/170...240/1A0 4DIMLT2 E	Automatic reversible	Automatic reversible	Yes	2.0 m
OT 165/170...240/1A0 4DIMLT2 E	Automatic reversible	Automatic reversible	Yes	2.0 m

Product description	Number of channels
OT 40/120...277/1A0 4DIMLT2 E	1
OT 60/170...240/1A0 4DIMLT2 E	1
OT 90/170...240/1A0 4DIMLT2 E	1
OT 165/170...240/1A0 4DIMLT2 E	1

¹⁾ For ≥700mA nominal output current

²⁾ Supports 15K, 5 %, NCP18XW153J03RB

Product family datasheet

Certificates & standards

Product description	Type of protection	Standards
OT 40/120...277/1A0 4DIMLT2 E	IP20 ¹⁾	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to FCC 47 part 15 class B/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207/UL-8750
OT 60/170...240/1A0 4DIMLT2 E	IP20 ¹⁾	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207
OT 90/170...240/1A0 4DIMLT2 E	IP20 ¹⁾	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207
OT 165/170...240/1A0 4DIMLT2 E	IP20 ¹⁾	Acc. to EN 61347-1/Acc. to EN 61347-2-13/Acc. to EN 62384/Acc. to EN 55015:2006 + A1:2007 + A2:2009/Acc. to EN 61547/Acc. to IEC 61000-3-2/Acc. to IEC 61000-3-3/Acc. to IEC 62386-101/Acc. to IEC 62386-102/Acc. to IEC 62386-207

Product description	Approval marks – approval
OT 40/120...277/1A0 4DIMLT2 E	CE / ENEC 10 / UR / VDE / VDE-EMC / CQC
OT 60/170...240/1A0 4DIMLT2 E	CE / ENEC 10 / VDE / VDE-EMC / CQC
OT 90/170...240/1A0 4DIMLT2 E	CE / ENEC 10 / VDE / VDE-EMC / CQC
OT 165/170...240/1A0 4DIMLT2 E	CE / ENEC 10 / VDE / VDE-EMC / CQC

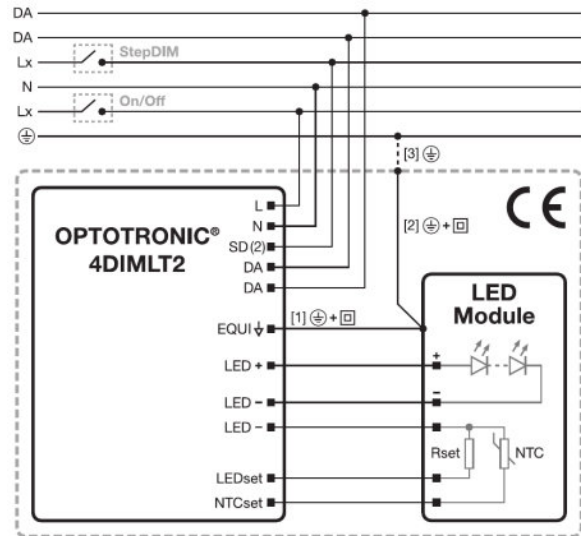
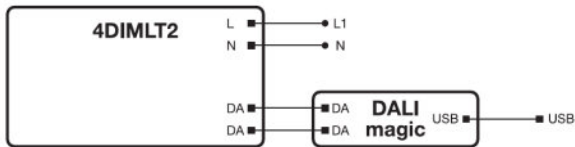
¹⁾ IP Fixture rating > IP54

Logistical data

Product description	Temperature range at storage
OT 40/120...277/1A0 4DIMLT2 E	-25...80 °C
OT 60/170...240/1A0 4DIMLT2 E	-25...80 °C
OT 90/170...240/1A0 4DIMLT2 E	-25...80 °C
OT 165/170...240/1A0 4DIMLT2 E	-25...80 °C

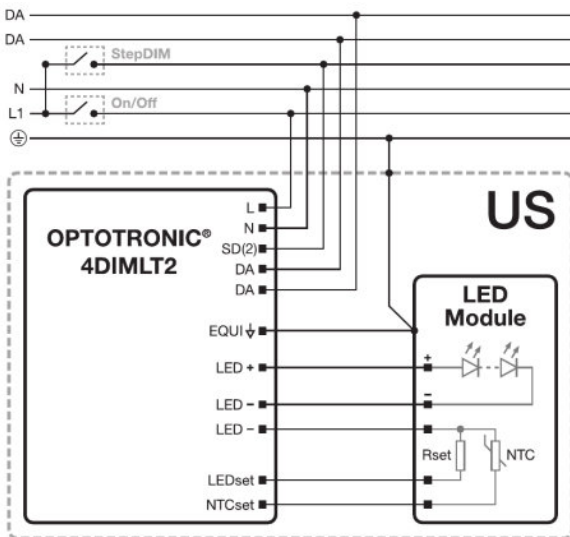
Product family datasheet

Wiring Diagram



OT 40/120...277/1A0 4DIMLT2 E, OT 60/170...240/1A0 4DIMLT2 E, OT 90/170...240/1A0 4DIMLT2 E, OT 165/170...240/1A0 4DIMLT2 E

OT 40/120...277/1A0 4DIMLT2 E, OT 60/170...240/1A0 4DIMLT2 E, OT 90/170...240/1A0 4DIMLT2 E, OT 165/170...240/1A0 4DIMLT2 E



OT 40/120...277/1A0 4DIMLT2 E

Product family datasheet

Equipment / Accessories

- DALI magic hardware for configuring 4DIM ECGs necessary
- Programmable via Tuner4TRONIC software

Application advice

For more detailed application information and graphics please see product datasheet.

Additional product information














- Default output current is 700 mA without any resistor connected to the LEDset port. As soon as the driver detects one time a resistor value within the resistor range of 2.37 kOhm (1050 mA) and 24.9 kOhm (200 mA) for more than 3 s, the driver activates the LEDset2 mode.
- The driver withstands an input voltage of up to 350 Vac for a maximum of two hours. Shut down of output load might occur in case the supply voltage exceeds the declared input voltage range.
- Shut down of output load happens if the input voltage of the load is below the allowed minimum output voltage of the driver. The driver automatically tries to switch on the load cyclically.
- In case the input voltage of the load exceeds the output voltage range of the driver, it automatically reduces the output current to keep the output voltage controlled to the maximum allowed output voltage.
- The driver automatically reduces the output current in case the maximum allowed output power is exceeded.
- The driver automatically adjusts the output voltage to the maximum output voltage if no load is connected and switches off the load after some seconds. Hot-plug of the load or external switching on the secondary side is not allowed.
- The driver is protected against temporary overheating by automatic reduction of the output current down to 30 % and then switches off.
- The EQUI pin shall be connected to the heat sink of the LED module to improve the surge withstand capability of the system and EMI in critical luminaires.
- Several external NTCs are supported for temperature protection of the LED module or luminaire. The type of NTC can be selected in the programming software in the temperature based mode. By default the resistor based mode is activated with following values: start derating: 6.3 kOhm, end derating 5.0 kOhm, shut off: 4.3 kOhm, derating level 50 %.
- The default dimming mode is StepDIM / AstroDIM / DALI (wiring selection) with following values for:- StepDIM: 100 % on, 50 % dimming level if SD port is active, fade time 180 s- AstroDIM: 100 % on, 50 % dimming level, 6 h dimming duration, start of dimming duration 2 h before the middle of the average switched-on time, fade time 180 s
- The constant lumen feature is disabled by default.
- For MainsDIM dimming mode and for 170 Vac input voltage condition the output power should not exceed 85 % of the maximum declared output power.
- For input voltage of 170...190 Vac, the maximum allowed output power is linear limited starting from 100 % at 190 Vac down to 85 % at 170 Vac, except for the 40 W type.
- If any output level is below the physical min level, the physical min level will be used.
- In case the 3DIM and 4DIMLT2 devices are operated on one common control phase connected to SD input the 3DIM devices needs to have a relay as described in the 3DIM application guide.
- The SD port is suitable for three phase systems with 220...240 Vac, for other input voltages only single phase systems are supported.
- For further details please consult the 4DIMLT2 application guide.

Sales and Technical Support

Sales and Technical Support www.osram.com

Product family datasheet

Download Data

File	
	Brochures 612095_Overvoltage protection for LED street lighting (EN)
	Brochures 545934_Technical Application Guide 4DIMLT2 LED drivers (GB)
	Certificates 725971_Certificate OT40 4DIM
	Certificates 545693_VDE license_OTi DALI
	Declarations of conformity 712567_Declaration of Conformity OT 4 DIM LT2 E
	Declarations of conformity 539443_UL-Certificate OT 40120-2771A0 4DIMLT2 E
	Declarations of conformity 607414_Synergrid Conformity 4DIMLT2
	Declarations of conformity 676767_ENEC certificate
	Certificates 725972_Certificate OT60 4 DIM
	Certificates 725973_Certificate OT90 4DIM
	Certificates 541182_CB certificate 40W 60W 90W 4DIM
	Certificates 685777_CB-Certificate-165W 4DIM
	Certificates 725970_Certificate OT165 4DIM

Logistical Data

Product code	Product description	Packaging unit (Pieces/Unit)	Dimensions (length x width x height)	Volume	Gross weight
4052899925182	OT 40/120...277/1A0 4DIMLT2 E	Shipping carton box 20	418 mm x 255 mm x 82 mm	8.74 dm ³	5549.00 g
4052899925199	OT 60/170...240/1A0 4DIMLT2 E	Shipping carton box 20	500 mm x 335 mm x 150 mm	25.13 dm ³	6592.00 g
4052899925205	OT 90/170...240/1A0 4DIMLT2 E	Shipping carton box 20	500 mm x 335 mm x 150 mm	25.13 dm ³	7792.00 g
4052899925212	OT 165/170...240/1A0 4DIMLT2 E	Shipping carton box 10	303 mm x 285 mm x 205 mm	17.70 dm ³	11637.00 g

The mentioned product code describes the smallest quantity unit which can be ordered. One shipping unit can contain one or more single products. When placing an order, for the quantity please enter single or multiples of a shipping unit.

Product family datasheet

Disclaimer

Subject to change without notice. Errors and omission excepted. Always make sure to use the most recent release.