QUICKTRONIC® INTELLIGENT QT*i* (DALI) … DIM

Approval marks

QT*i* DALI…DIM/ 220 – 240V/ 0, 50…60 Hz

- Supply voltage: 220 - 240 V
- Line frequency: 0, 50 - 60 Hz
- Line voltage: 198 - 264 V
- Suitable for use in emergency lighting systems as per EN 50172/DIN VDE 0108-100
- Configurable emergency power characteristics; light value can be set between 100 % and 1 % luminous flux
- Same luminous flux with direct and alternating current
- The battery voltage may drop to 154 V. Ignition must take place above 198 V
- Digitally controlled preheating
  - Perfect lamp starting for applications with motion sensors, lamp start within 0.6 s
  - Optimum preheating in any dimmer setting
- Dimming range: 1 to 100 % luminous flux
- Dimming of amalgam lamps without flickering or reduced lifespan of lamps and ECG in the full dimming range from 1 to 100 %
- Very high energy efficiency thanks to cut-off technology (cut-off above 80 % luminous flux) and very low connected load at rated luminous flux
- Life of 100,000 hours and more (for a definition of life see Indoor and Outdoor Lighting catalogue, page 10.141, Chapter 10)
- Automatic safety shutdown of lamps in the event of a defect or at end of life (EoL T.2)
- Automatic restart of replacement lamps
- Suitable for luminaires of protection class I
- Effective overtemperature protection of the dimmable ECG thanks to intelligent thermal management at high tc temperatures
- Very low standby consumption:
  - QTi DALI 1x, 2x = 0.2 W – Luminaires with up to 2 ECGs comply with the Minergie standard.
  - QTi DALI 3x, 4x: < 0.5 W – Luminaire with one ECG complies with the Minergie standard
- Maximum dimming rate for dynamic RGB colored light applications 5 ms from 1 % to 100 % thanks to optimized control of electrode preheating
- Energy Efficiency Index **A1 BAT**
- Tc = +75°C (max.)

- Max. cable cross section for IDC-Contact*: “s“: 0.5; “f“: 0.75 mm²
- Max. cable cross section for plug contact*: “s“: 0.5...1.0 mm²

* “s“ = “solid“ = Single-wire conductor, “f“ = Multi-wire conductor

Approbations

- Safety: to EN 61347-2-3
- Lamp operation: to EN 60929
- RI suppression: to EN 55015:2006+A1:2007 /CISPR 15, EN 55022
- Line harmonics: to EN 61000-3-2
- Immunity: to EN 61547

DALI product features

- Control via the DALI interface
- Compliance with the DALI standard to IEC 60929 and IEC 62386
- For all OSRAM ECGs the control input of the DALI interface is protected against overvoltage and polarity reversal
- Touch DIM® and Touch DIM® Sensor function: Manual dimming (Touch DIM®) without any controller and with standard switches, incl. memory function (double click) and soft start

QT*i* DIM (1…10V)/ 220 – 240V/ 0, 50…60 Hz

Approval marks

- Supply voltage: 220 - 240 V
- Line frequency: 0, 50 - 60 Hz
- Line voltage: 198 - 264 V
- Suitable for use in emergency lighting systems as per EN 50172/DIN VDE 0108-100
- Same luminous flux with direct and alternating current
- The battery voltage may drop to 154 V. Ignition must take place above 198 V
- Digitally controlled preheating - Perfect lamp starting for applications with motion sensors, lamp start within 0.6 s - Optimum preheating in any dimmer setting
- Dimming range: 1 to 100 % luminous flux
- Dimming of amalgam lamps without flickering or reduced lifespan of lamps and ECG in the full dimming range from 1 to 100 %
- Very high energy efficiency thanks to cut-off technology (cut-off above 80 % luminous flux) and very low connected load at rated luminous flux
- Life of 100,000 hours and more (for a definition of life see Indoor and Outdoor Lighting catalogue, page 10.141, Chapter 10)
- Automatic safety shutdown of lamps in the event of a defect or at end of life (EoL T.2)
- Automatic restart of replacement lamps
- Suitable for luminaires of protection class I
- Effective overtemperature protection of the dimmable ECG thanks to intelligent thermal management at high tc temperatures
- Maximum dimming rate for dynamic RGB colored light applications 5 ms from 1 % to 100 % thanks to optimized control of electrode preheating
- Energy Efficiency Index EEI=A1 BAT
- Tc = +75°C (max.)
- Max. cable cross section for IDC-Contact*: “s“: 0.5; “f“: 0.75 mm²
- Max. cable cross section for plug contact*: “s“: 0.5...1.0 mm²

* “s“ = “solid“ = Single-wire conductor, “f“ = Multi-wire conductor

Approbations

- Safety: to EN 61347-2-3
- Lamp operation: to EN 60929
- RI suppression: to EN 55015:2006+A1:2007/CISPR 15, EN 55022
- Line harmonics: to EN 61000-3-2
- Immunity: to EN 61547
- Control via the 1 - 10 V interface

Technical Data: QT*i* (DALI)…DIM

Product description	Lamp Constant = Amalgam Lamp SLS = Seamless Lamp ES = Energy Saver Lamp XT = Longlife Lamp	I_N [A]	W Lamp	W System PN100%*	W System PN1%*	λ	ta [°C] Full dimming range: 1…100%	kHz ECG	Weight [g]	Î [A]	th [µs]	n (B10) n (B16)
QTi (DALI) 1x14/24 DIM	1xHE 14W (SLS**)	0.07	13.7	15.4	5.5	0.95						
	1xHO 24W (Constant)	0.11	22.5	25.3	5.5	0.98		53…120				
	1xDL 24W	0.11	22.5	25.3	5.5	0.98						
QTi (DALI) 1x21/39 DIM	1xHE 21W (SLS)	0.11	20.7	23.1	5.5	0.95						
	1xHO 39W (Constant, SLS)	0.18	38.0	41.8	7.0	0.98						
	1xDL 22W HE	0.11	20.7	23.1	5.5	0.95						
	1xDL 40W (Constant)	0.18	38.0	41.8	7.0	0.98			305	24	174	17 (B10) 28 (B16)
	1xF 70W	0.29	60.0	65.2	8.5	0.99						
QTi (DALI) 1x28/54 DIM	1xHE 28W (SLS), 1xHE 25W ES	0.14	27.8	30.1	6.5	0.97						
	1xHO 50W ES	0.26	53.8	58.8	8.5	0.99						
	1xHO 54W (Constant, SLS, XT)	0.26	53.8	58.8	8.5	0.99						
	1xDL 55W (Constant, XT)	0.26	53.8	58.8	8.5	0.99		44…120				
	1xDL 26W HE	0.14	27.8	30.1	6.5	0.97						
	1xDL 28W HE	0.14	27.8	30.1	6.5	0.97						
QTi (DALI) 1x35/49/80 DIM	1xHE 35W, 1xHE 32W ES	0.17	34.8	37.8	6.5	0.95						
	1xHO 45W ES	0.24	49.3	53.4	6.0	0.98						
	1xHO 49W (Constant)	0.24	49.3	53.4	6.0	0.98			305	28	224	12 (B10) 19 (B16)
	1xHO 73W ES	0.39	80.0	88.1	8.5	0.99						
	1xHO 80W (Constant, XT)	0.39	80.0	88.1	8.5	0.99						
	1xDL 80W (Constant)***	0.39	80.0	88.1	8.5	0.99						
QTi (DALI) 2x14/24 DIM	2xHE 14W (SLS**)	0.14	13.7	30.6	8.2	0.95						
	2xHO 24W (Constant)	0.22	22.5	49.3	9.8	0.98		53…120	370	35	180	12 (B10) 19 (B16)
	2xDL 24W	0.22	22.5	49.3	9.8	0.98						
QTi (DALI) 2x21/39 DIM	2xHE 21W (SLS)	0.21	20.7	45.0	9.1	0.95	+10…50					
	2xHO 39W (Constant, SLS)	0.36	38.0	82.0	10.9	0.98	(SLS HO:					
	2xDL 22W HE	0.21	20.7	45.0	9.1	0.95	+15…50)					
	2xDL 40W (Constant)	0.36	38.0	82.0	10.9	0.98						
	2xF 70W	0.56	60.0	128.0	16.0	0.99						
QTi (DALI) 2x28/54 DIM	2xHE 28W (SLS), 2xHE 25W ES	0.27	27.8	60.2	10.7	0.97						
	2xHO 50W ES	0.51	53.8	115.0	14.5	0.99			370	45	204	8 (B10) 13 (B16)
	2xHO 54W (Constant, SLS, XT)	0.51	53.8	115.0	14.5	0.99						
	2xDL 55W (Constant, XT)	0.51	53.8	115.0	14.5	0.99						
	2xDL 26W HE	0.27	27.8	60.2	10.7	0.97						
	2xDL 28W HE	0.27	27.8	60.2	10.7	0.97		44…120				
QTi (DALI) 2x35/49 DIM	2xHE 35W, 2xHE 32W ES	0.33	34.8	74.5	11.5	0.98						
	2xHE 32W ES	0.33	34.8	74.5	11.5	0.98						
	2xHO 49W (Constant)	0.45	49.3	103.6	13.2	0.99						
QTi (DALI) 2x35/49/80 DIM	2xHE 35W, 2xHE 32W ES	0.34	34.7	74.0	11.0	0.95						
	2xHO 45W ES	0.45	48.5	101.0	12.1	0.97			370	60	230	5 (B10) 9 (B16)
	2xHO 49W (Constant)	0.45	48.5	101.0	12.1	0.97						
	2xHO 73W ES	0.72	77.0	165.0	17.4	0.99						
	2xHO 80W (Constant, XT)	0.72	77.0	165.0	17.4	0.99						
	2xDL 80W (Constant)***	0.72	77.0	165.0	17.4	0.99						
QTi (DALI) 3x14/24 DIM	3xHE 14W	0.2	13.7	44.6	10.6	0.97						
	3xHO 24W (Constant)	0.32	22.5	72.9	13.7	0.99			420	35	180	12 (B10) 19 (B16)
	3xDL 24W	0.32	22.5	72.9	13.7	0.99		40…100				
QTi (DALI) 4x14/24 DIM	4xHE 14W	0.27	13.7	60.2	14.9	0.97						
	4xHO 24W (Constant)	0.43	22.5	97.9	18.2	0.99			420	45	205	8 (B10) 13 (B16)
	4xDL 24W	0.43	22.5	97.9	18.2	0.99						
QTi (DALI) 1x18 DIM	1xL 18W	0.08	16.0	18.3	5.5	0.97	-20…50	51…120				
	1xDL 18W	0.08	16.0	18.3	5.5	0.97	+10…50					
QTi (DALI) 1x36 DIM	1xL 36W	0.16	32.0	36.0	6.5	0.98	-20…50	48…120				
	1xDL 36W (XT)	0.16	32.0	36.0	6.5	0.98	+10…50		305	24	174	17 (B10) 28 (B16)
QTi (DALI) 1x58 DIM	1xL 58W	0.25	50.0	55.6	8.0	0.99	-20…50	46…120				
QTi (DALI) 2x18 DIM	2xL 18W	0.16	16.0	36.5	8.5	0.97	-20…50	51…120	370	35	180	12 (B10) 19 (B16)
	2xDL 18W	0.16	16.0	36.5	8.5	0.97	+10…50					
QTi (DALI) 2x36 DIM	2xL 36W	0.31	32.0	69.0	11.0	0.98	-20…50	48…120				
	2xDL 36W (XT)	0.31	32.0	69.0	11.0	0.98	+10…50		370	45	204	8 (B10) 13 (B16)
QTi (DALI) 2x58 DIM	2xL 58W	0.47	50.0	108.0	14.4	0.99		46…120				
QTi (DALI) 3x18 DIM	3xL 18W	0.24	16.0	54.1	11.6	0.98	-20…50					
QTi (DALI) 4x18 DIM	4xL 18W	0.31	16.0	70.6	15.9	0.99		40…100	420	35	180	12 (B10) 19 (B16)
QTi (DALI)-T/E 1x18-57 DIM (3…100%)	1xT/E 18W	0.09	17.7	20.0	4.5	0.95						
	1xT/E 26W (Constant)	0.13	25.1	29.0	5.8	0.97						
	1xT/E 32W (Constant)	0.16	32.0	36.0	6.2	0.98						
	1xT/E 42W (Constant)	0.21	42.7	47.0	6.6	0.99						
	1xT/E 57W (Constant)	0.27	56.1	61.0	7.0	0.99			206	28	224	12 (B10) 19 (B16)
	1xFC 22W	0.12	21.9	26.0	5.2	0.96						
	1xFC 40W	0.20	40.0	45.0	6.5	0.98						
	1xDL 24W	0.12	21.9	26.0	5.2	0.96						
	1xDL 40W	0.20	40.0	45.0	6.5	0.98						
QTi (DALI)-T/E 2x18-42 DIM (3…100%)	2xT/E 18W	0.17	16.7	38.0	8.8	0.95	+10…50	42…130				
	2xT/E 26W (Constant)	0.25	24.4	56.0	10.0	0.98						
	2xT/E 32W (Constant)	0.30	30.8	69.0	11.0	0.99						
	2xT/E 42W (Constant)	0.39	41.0	90.0	12.4	0.99						
	2xFC 22W	0.22	22.2	51.0	9.7	0.97			222	45	204	8 (B10) 13 (B16)
	2xFC 40W	0.38	39.6	87.0	12.1	0.99						
	2xDL 24W	0.22	22.2	51.0	9.7	0.97						
	2xDL 40W	0.38	39.6	87.0	12.1	0.99						
	1xFC 22W+1xFC 40W	0.30	31.2	70.0	10.9	0.98						

* At +25 °C Ambient Lamp Temperature ** Max. Distance to luminaire reflector 1cm *** Dimming time 1 % --> 100 % > 1 s

Installation Instructions

a) Radio interference suppression of dimmable luminaires

General hints:

- Mains cables and control lines may be routed together and should be laid close to the luminaire wall
- Mains and control cables must not be laid close to the lamp cables
- If crossovers of mains and lamp cables are unavoidable, they should cross perpendicularly
- Do not lay the PE conductor together with the lamp cables
- Do not use shielded lamp cables (reduction of capacity leakage currents)
- The OSRAM DALI/DIM ECG must always be installed near the lamp(s) so that the lamp cables can be kept short in the interests of good radio interference protection
- Lay the lamp cables close together and close to the lamp
- Lamp cables must not be laid in metal pipes and must not be shielded cables
- Guide the cables of the different lamp ends separately
- In the case of multi-lamp OSRAM DALI/DIM ECGs, the cables to the respective lamp ends must be of the same length to prevent differences in the brightness
- When dimming flourescent lamps the maximum lamp voltage is reached at the lowest dimmer setting (3 % - 10 %) due to the negative current-voltage characteristic

Operation of multiple ECGs in a luminaire:

There should be a minimum spacing of 12 cm between the lamp circuits (lamp and cables) of different ECGs. If this is not possible, the lamp wiring must be carefully installed so coupling between the lamp circuits is reduced to a minimum:

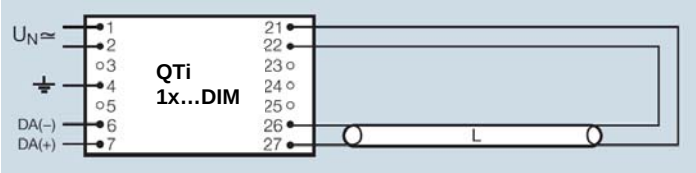
- Lay the lamp cables close to the appropriate lamps so that the area covered by the lamp circuit is as small as possible. The lamp circuits of the two ECGs must not overlap. This is particularly important for color control if adjacent ECGs are dimmed to different levels.
- There should be a spacing of several centimeters between the lamp cables of two ECGs
- The "short" (hot) lamp cables (see also ECG imprint) should lead to one side of the lamp and should be as short as possible. The "long“ (cold) lamp cables to the other side of the lamp.
- Mains and control cables should not be laid close to the lamp cables (prevents undesired couplings into the control cable)
- All the mains and control cables may be routed together. To ensure that radio interference suppression is not impaired, there should be a gap of several centimeters to the lamp cables.
- In the "worst case" twist the cables of the heating circuits together, hence ensuring they lie close together. With 1-lamp ECGs these are the 21-22 and 26-27 cables, with 2-lamp ECGs; 21-22 and 21-23, 24-25 and 26-27. This is particularly important if adjacent ECGs are operated at the lowest dimmer setting (1(3)%).

Line lengths and –capacities

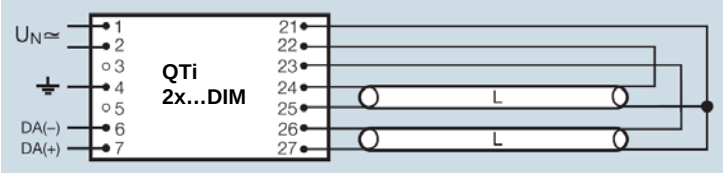
Maximum line lengths between dimmable ECG (QTi DALI/DIM) and lamps		
	cold ends	hot ends
	1-lamp 21, 22	1-lamp 26,27
	2-lamp 21, 22, 23	2-lamp 24, 25, 26, 27
T5	1.5 m	1.0 m
T8	1.5 m	1.0 m
Dulux D/E, T/E	all 0.5 m	

	T5	T8
Maximum capacitance of a filament cable pair to ground:	75 pF	150 pF
Maximum capacitance between "hot" and "cold":	15 pF	30 pF

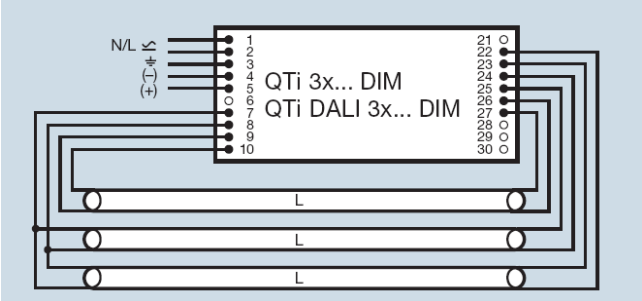
b) Lamp wiring QT*i* (DALI)…DIM

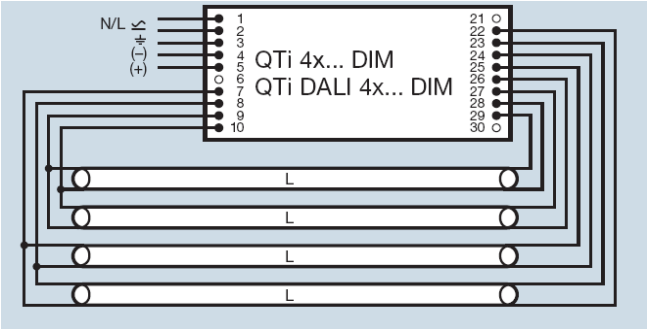


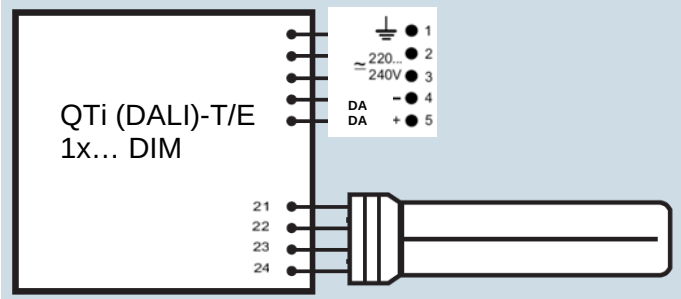
lines 26 and 27 max. 1 m length



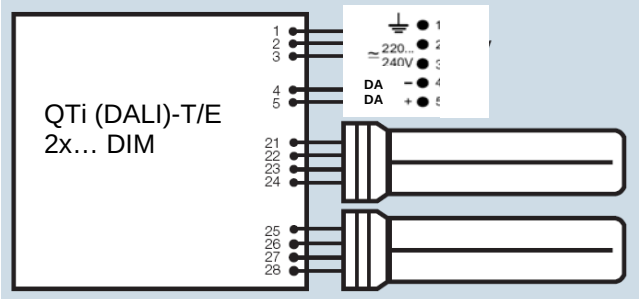
lines 24, 25 and 26, 27 max. 1 m length







lines 21-24 max. 0.5 m length

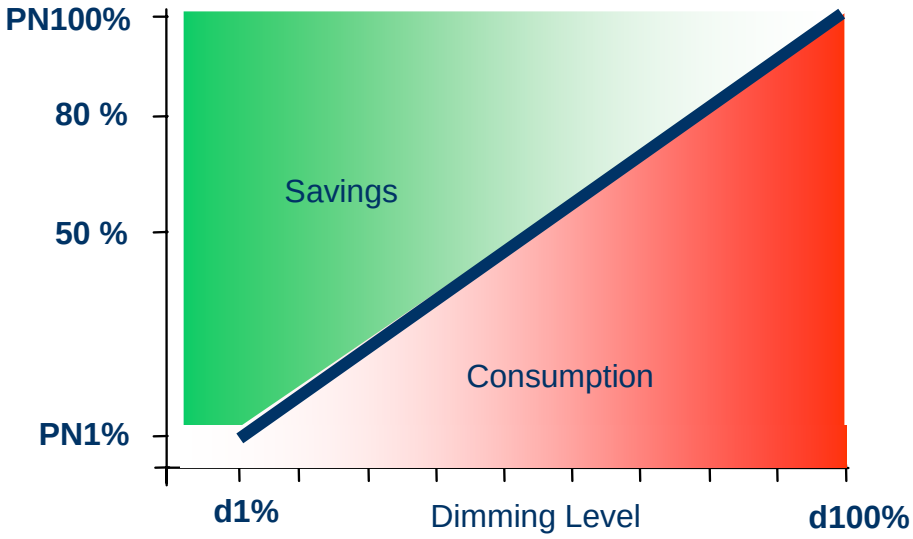


lines 21-28 max. 0.5 m length

System energy consumption and dimmer setting

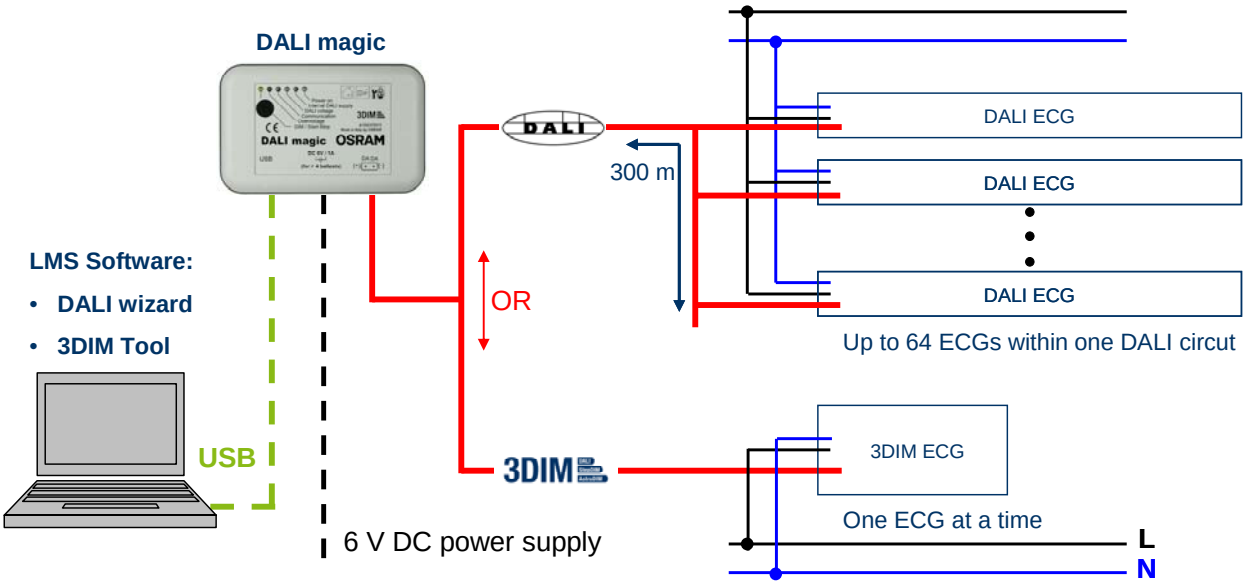
Because there is a largely linear relationship between the power consumption of the DALI/DIM systems (lamp and ECG) and the dimmer setting, the power consumption PN(d) can be calculated for each dimmer setting d (in percent) from the values PN100% (100% nominal power, PN = Power Nominal) and PN1% (nominal power of 1 %) (depending on ECG lamp combination, s. page 3):

$$PN(d) = PN1\% + \frac{PN100\% - PN1\%}{99\%} \bullet (d - 1\%)$$

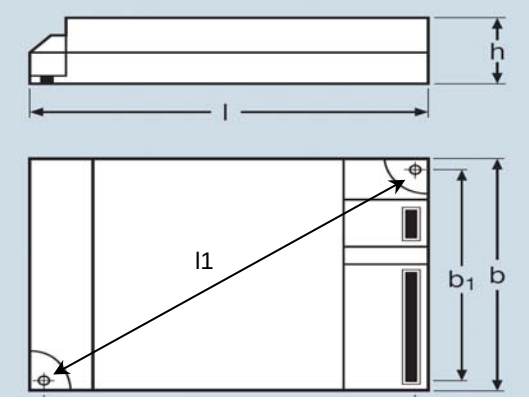


OSRAM DALI magic/wizard: Diagnostics & Analysis of DALI Installations

- Easy **Diagnostics/Analysis/Parametrization** of DALI Installations
- Fast Search of Failures in Adressing/Programming
- Easy Programming of OSRAM 3DIM ECG
- DALI magic **EAN40 (1 pc.): 4008321582768** / Software Download: **www.osram.com/lms-magic**



Housing dimensions/article numbers QT*i* (DALI)…DIM



Product description	l [mm]	b [mm]	h [mm]	l1 [mm]	DALI EAN10 1 pc.	DALI EAN40 20 pcs.	1…10V EAN10 1 pc.	1…10V EAN40 20 pcs.
QTi (DALI) 1x14/24 DIM	360	30	**21**	350	4050300870380	4050300870397	4050300870922	4050300870939
QTi (DALI) 1x21/39 DIM	360	30	**21**	350	4050300870366	4050300870373	4050300870564	4050300870571
QTi (DALI) 1x28/54 DIM	360	30	**21**	350	4050300870809	4050300870816	4050300870588	4050300870595
QTi (DALI) 1x35/49/80 DIM	360	30	**21**	350	4050300870342	4050300870359	4050300870540	4050300870557
QTi (DALI) 2x14/24 DIM	423	30	**21**	415	4050300870861	4050300870878	4050300870946	4050300870953
QTi (DALI) 2x21/39 DIM	423	30	**21**	415	4050300870489	4050300870496	4050300870694	4050300870700
QTi (DALI) 2x28/54 DIM	423	30	**21**	415	4050300870502	4050300870519	4050300870717	4050300870724
QTi (DALI) 2x35/49 DIM	423	30	**21**	415	4050300870465	4050300870472	4050300870670	4050300870687
QTi (DALI) 2x35/49/80 DIM	423	30	**21**	415	4050300870441	4050300870458	4050300870984	4050300870991
QTi (DALI) 3x14/24 DIM	360	40	**21**	350	4008321069955	4008321069962	4008321069719	4008321069924
QTi (DALI) 4x14/24 DIM	360	40	**21**	350	4008321070036	4008321070043	4008321069993	4008321070005
QTi (DALI) 1x18 DIM	360	30	**21**	350	4050300870403	4050300870410	4050300870601	4050300870618
QTi (DALI) 1x36 DIM	360	30	**21**	350	4050300870427	4050300870434	4050300870625	4050300870632
QTi (DALI) 1x58 DIM	360	30	**21**	350	4050300870823	4050300870830	4050300870908	4050300870915
QTi (DALI) 2x18 DIM	423	30	**21**	415	4050300870526	4050300870533	4050300870960	4050300870977
QTi (DALI) 2x36 DIM	423	30	**21**	415	4050300870885	4050300870892	4050300870755	4050300870762
QTi (DALI) 2x58 DIM	423	30	**21**	415	4050300870847	4050300870854	4050300870731	4050300870748
QTi (DALI) 3x18 DIM	360	40	**21**	350	4008321069979	4008321069986	4008321069931	4008321069948
QTi (DALI) 4x18 DIM	360	40	**21**	350	4008321070050	4008321070067	4008321070012	4008321070029
QTi (DALI)-T/E 1x18-57 DIM	123	79	33	130	4008321060808	4008321060815	4008321060860	4008321060877
QTi (DALI)-T/E 2x18-42 DIM	123	79	33	130	4008321060822	4008321060839	4008321060846	4008321060853

Manufacturer's address:

OSRAM GmbH

Steinerne Furt 62
D-86167 Augsburg
Germany

www.osram.com

Technical support:
www.osram.de
www.osram.com
Kunden Service Center Germany
+49 (0)89-6213-60 00