

SORAA

Electrical compatibility – Warm Dim AR111 12V lamps – International

Table of contents

- General compatibility guidelines.....Page 2
- Transformer compatibility.....Page 3-4
- Dimming compatibility.....Page 5-7
 - Dimming compatibility (Soraa Optima transformer).....Page 5
 - Dimming compatibility (other transformers, phase-cut dimming).....Page 6

Scope

This document provides the basic guidelines regards electrical compatibility of SORAA 12V Warm Dim AR111 lamps and compatibility tables for transformers and dimmers.

Transformer Compatibility

SORAA 12V AR111 lamps are made to work with 12V AC magnetic (MLV) and electronic (ELV) transformers and 12V DC transformers. Transformer compatibility tables are on this document. If multiple lamps are installed on one transformer, they need to be connected in parallel. They cannot be installed in series.

- 12V AC Magnetic transformers and 12V DC transformers are in general compatible.
- 12V AC Electronic transformers generally have a minimum load, and SORAA recommends using only transformers that have been tested and found compatible. In general we recommend to use transformers with very little or no minimum load (0W). If your transformer is not in the compatibility tables below, it does not mean it is incompatible, but it means that we have not tested it to date, please contact techsupport@soraa.com for guidance.

Dimmer Compatibility

SORAA 12V AR111 lamps are made to work with trailing edge (reverse phase) and leading edge (forward phase) phase cut dimmers.

Electronic dimmable transformers need trailing edge dimmers, while Magnetic transformers need leading edge dimmers. Dimmer compatibility tables are on pages 8-15.

Along the top of the dimmer compatibility tables you will see the different dimmers that we have tested, and along the left side of the chart you will see the different transformers we tested. The percentages for each transformer/dimmer combination are the percentage of light output that we were able to dim down to without seeing any problems like flicker/shimmer. Anything 30% or above is considered not compatible and you will see a "NC" in a grey cell. There might be a minimum wattage load on the transformer/dimmer. If this minimum load is not met, there might be compatibility issues.

Maximum number of lamps on a dimmer/transformer

The following need to be considered when determining the amount of lamps on a dimmer/transformer.

1. SORAA tests have been carried out with 1 lamp unless stated otherwise.
2. There is a repetitive, very brief current spike the LED lamp will see twice per cycle. This current spike has to be provided by the transformer and/or dimmer, and will affect the recommended lamp load on each transformer or dimmer.
3. Ultimately the transformer/dimmer manufacturer is the only one with authority to rate their product, but SORAA can give an Engineering estimate.
4. For transformers, we recommend to use a 1.4 de-rating factor:
For example for a 50W transformer it would mean $50/1.4=35W$ of LED, so an estimated maximum of 1 lamp 18.5W.
5. For dimmers, we recommend to use a 2.0 de-rating factor for leading edge dimmers with magnetic transformers; and a 4.0 de-rating factor for trailing edge dimmers driving Low Voltage lamps on electronic transformers.
For example for a 500W leading edge dimmer it would mean $500/2=250W$ of LED, so an estimated maximum of 13 lamps 18.5W.
For example for a 400W trailing edge dimmer it would mean $400/4=100W$ of LED, so an estimated maximum of 5 lamps 18.5W.

Distance between transformer and lamp(s)

- 12V AC Magnetic transformers and 12V DC transformers do not have a limitation regards the maximum length of the wires between transformer and lamp. Only the voltage drop has to be taken into account (losses because of the inner resistance of the conductors).
- 12V AC Electronic transformers have a limitation in the length of the wires between transformer and lamp(s). This length is usually stated by the transformer manufacturer on its specs or on the transformer itself, and generally it is limited to 2 meters (6 feet).

Disclaimer

Compatibility tests are conducted by Soraa only as guidance for the user. All tests are conducted under bench conditions; results may differ from test results depending on conditions at the application site. Results may vary due to variability in component choices and manufacturing processes by the transformer and dimmer manufacturers. For more information on the dimmers/transformers, please find specs on the manufacturer's website.

SORAA WARM DIM AR111 12V - TRANSFORMER COMPATIBILITY LIST - International

PASS - The transformer supports one or more lamps up to the maximum wattage;

NC - SORAA does not recommend this transformer for use with its lamps;

2 Lamp Min - The transformer supports two or more lamps upto the maximum lamp wattage limit;

3 Lamp Min - The transformer supports three or more lamps upto the maximum lamp wattage limit

Transformer Brand	Transformer Model	Wattage (W)	Transformer Type	Compatibility with 1pc 19W lamp	Maximum nr of lamps per transformer
ABB Speedy	Speedy105 ETR 105-230/12KF	105	ELV	2 lamp min	3
AcTEC	Mini60 SeriesIII	60	ELV	PASS	2
Atco	Speedy TED 105	105	ELV	PASS	3
Berker	Tronic-Trafo 150W	150	ELV	PASS	5
BLV	Luxia 60W Model 456001	60	ELV	PASS	2
BLV	Luxia 105W Model 45600201	105	ELV	PASS	4
ECOPAC	ELED-25-12D	25	DC	NC	NC
EUROPOLE	OPTIMO 4 (SEET 7730 STE-60VA)	60	ELV	PASS	2
Fulham Pony	PET-230-12-105	105	ELV	PASS	3
GATA	T50/209.23	50	MLV	PASS	1
Govena	YT50	50	ELV	PASS	1
Hatch	RS12-60M-LED-230	60	ELV	PASS	2
LCI	ET 3-60 C	60	ELV	PASS	2
Lightech	LET 75/12V	75	ELV	PASS	2
MeanWell	LPV-20-12	20	DC	NC	NC
Mode Lighting	MOE-050-D-240	50	ELV	PASS	1
Mode Lighting	ET-040-PL-230-RD PUMA-LED	40	ELV	PASS	1
Niko	320-00101	70	ELV	PASS	2
nobile	EN-60D	60	ELV	PASS	2
Osram	ET-A 60/220-240	60	ELV	PASS	2
Osram	ET-LED 30/220-240	30	ELV	PASS	1
Osram	ET-PARROT 70/220-240 I	70	ELV	PASS	2
Osram	ET-PARROT 105/220-240 I (UK)	105	ELV	PASS	3
Osram	ET-REDBACK 60VA/230-240	60	ELV	PASS	2
Osram	ET-REDBACK 40VA/230-240	40	ELV	PASS	1
Osram	Hti DALI 105/230-240 DIM	105	ELV	2 lamp min	3
Osram	ET-P 60/220-240	60	ELV	PASS	2
Osram Halotronics	HTM 105/230-240	105	ELV	PASS	3
Osram Halotronics	HTM 70/230-240	70	ELV	PASS	2
Osram Halotronics	HTM 150	150	ELV	PASS	5

SORAA WARM DIM AR111 12V - TRANSFORMER COMPATIBILITY LIST - International

PASS - The transformer supports one or more lamps up to the maximum wattage;

NC - SORAA does not recommend this transformer for use with its lamps;

2 Lamp Min - The transformer supports two or more lamps upto the maximum lamp wattage limit;

3 Lamp Min - The transformer supports three or more lamps upto the maximum lamp wattage limit

Transformer Brand	Transformer Model	Wattage (W)	Transformer Type	Compatibility with 1pc 19W lamp	Maximum nr of lamps per transformer
Philips	CERTALINE 60W	60	ELV	PASS	2
Philips	CERTALINE 150W	150	ELV	PASS	5
Philips	ET-S 60 220-240	60	ELV	PASS	2
Philips	Primaline 105 230-240	105	ELV	PASS	3
Philips	Certaline 105W	105	ELV	PASS	3
Philips	Primaline 70	70	ELV	PASS	2
Philips	ET E-60	60	ELV	PASS	2
Relco	ICE 60 PFS TH	60	ELV	PASS	2
Relco	ICE 105 PFS TH RN1604	105	ELV	2 lamp min	3
Soraa	Optima TCVW-P-12-600-70-01-S3	70	ELV	PASS	2
TCI	MW 70 LED cod.119772	70	ELV	PASS	2
TCI	Round 50	50	ELV	PASS	1
Varilight	YT50LZ	50	ELV	PASS	1

Transformer compatibility Notes:

- Compatibility tests are conducted by Soraa only as guidance for the user
- All tests are conducted under bench conditions; results may differ from test results depending on conditions at the application site
- Results may vary due to variability in component choices and manufacturing processes by the transformer manufacturer
- if the transformer's minimum wattage is not met, the lamp may only operate under nominal conditions (nominal line voltage and thermal conditions where the lamp is at full power).
- if the fixture/transformer is not listed as tested, please consult with Soraa first before making any recommendations to end customer.
- Above table is for applications where no dimmer is used. If a dimmer is used, the user should consult the Dimmer/Transformer table, or contact Soraa if their desired combination is not listed.
- Transformer maximum load should not be exceeded. Please follow transformer/dimmer manufacturer's guidelines regarding maximum load with LED lamps. To calculate the estimated maximum number of lamps, please download our calculator from the following link:
<https://res.cloudinary.com/soraa/raw/upload/v1452276139/content/max-lamp-load-calculator.xlsx>
 Or following the guidelines stated on page 2 of this document.
- (*) This transformer added to the compatibility list as of this Revision

SORAA Optima 230V Electronic 12V transformer with 12V Soraa AR111 WARM DIM lamps - DIMMER COMPATIBILITY LIST

Dimmer Manufacturer	Dimmer family	Dimmer model number	Dimming mode	Number of transformers tested per dimmer	Number of lamps per transformer	Dim (%)	Comments
Helvar	Digidim	452	Trailing	3	1	0%	
Helvar	Digidim	454	Trailing	3	1	2%	
Lutron	Grafik Eye QS + Interface	NGRX-ELVI-CE with Grafik Eye QS main unit	Adaptive-TE	3	1	0%	
Lutron	Homeworks QS Energy Savr Node QS (for Quantum and QS systems)	QSNE-4A-D (Gen2) / LQSE-4A-D (Gen2)	Trailing	3	1	NC	
Philips Dynalite		DGLEDM401	Trailing	3	1	10%	
Varilight	V-PRO	JQP401W	Trailing	3	1	10%	
Viribright		80-20EU	Trailing	1	1, 2	3%	
				2	3	4%	
Yokis		MTV500E / M	Trailing	3	1	4%	(*) Limited by dimmer travel

SORAA WARM DIM AR111 12V - DIMMING COMPATIBILITY LIST - International

Transformer manuf. ↓	Transformer model ↓	Transf. type ↓	← Number of lamps per transformer	Dimmer →	Large multichannel dimmers						Small wall mounted, rotary, etc dimmers					
					CLIPSAL L5504D2U	Helvar Digidim 452	Helvar Digidim 454	Lutron Energi Svr Node QSNE-4A-D	Lutron Grafik Eye QS QSGR + ELVI module	Philips Dynalite DGLED401	CABAC HNS630DT	CLIPSAL 32ELEDM	DIGINET DGLCDM400 (MEDM)	Legrand Arteor AR400A3PM	Vossloh Schwabe number: 553962	Variilight V-PRO JQP401W
					Adaptive (trailing)	Trailing	Trailing	Trailing	Trailing	Trailing	Trailing	Trailing	Trailing	Trailing	Adaptive (trailing)	Trailing
AcTEC	Mini60 SeriesIII	ELV	1		NC		12%	NC		13%	5%	6%	6%	6%	NC	
BLV	nr. 45600101	ELV	1			0%	3%	NC	5%	10%						8%
Osram	ET-LED 30	ELV	1			0%	3%	NC	7%	9%						NC

SORAA WARM DIM AR111 12V - DIMMER/TRANSFORMER COMPATIBILITY - North America

Dimming compatibility Notes:

- Compatibility tests are conducted by Soraa (unless stated otherwise) under bench conditions as guidance for the user; results at the application site may differ due to variability in usage conditions or in dimmer or transformer components/manufacturing.
- Regards compatibility tests conducted by dimmer manufacturer, please contact the manufacturer or Soraa for more details and/or reports.
- If the transformer's minimum wattage is not met, the lamp may only operate under nominal conditions (nominal line voltage and thermal conditions where the lamp is at full power).
- The lamp load (or number of lamps) should meet minimum load requirement of respective dimmer.
- If the dimmer and transformer is not listed, please consult with Soraa before making recommendations to the end customer.
- Transformer/dimmer maximum load should not be exceeded. Please follow transformer/dimmer manufacturer's guidelines regarding maximum load with LED lamps. To calculate the estimated maximum number of lamps, please download our calculator from the following link: <https://res.cloudinary.com/soraa/raw/upload/v1452276139/content/max-lamp-load-calculator.xlsx>
Or following the guidelines stated on page 2 of this document.
- (*) One or more test results with this transformer added to the compatibility list as of this Revision

--%	Dims to < 20% (of the measured light output)
--%	Dims to 20-30% (of the measured light output)
NC	Not compatible (or dims to >30%)
Blank cell	Not tested
	Not valid combination