



Electrical compatibility – Warm Dim AR111 12V lamps – International

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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 pages 3-7. 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 18.5W - TRANSFORMER COMPATIBILITY - 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;

Mfg	Model	Wattage	Voltage	Class / Frequency	Country	Transformer Type	1 Lamp
International							
ABB	ETR-DALI 105 230-12KF	105	230	50	EU	Electronic	NC
ABB	Speedy 105	105W	230	50	EU	Electronic	Pass
AcTec	Ultra 70	70	220-240	50	EU/Asia	Electronic	Pass
AcTec	DIM12-25	25W	220-240V	DC	EU/Asia	Electronic/DC	NC
AcTEC	Micro60	20-60W	220-240V	50/60	EU/Asia	Electronic	NC
ATCO	Speedy TED 105	35-105	240	50	Australia	Electronic	Pass
BERKER	TRONIC TRAFO	20-105W	230/240	50/60	EU	Electronic	Pass
BLV	45600101	0-60	230V	50	EU	Electronic	Pass
BLV	45600201	0-105W	230	50	EU	Electronic	Pass
Bright Star Lighting (MSD)	MSD-DALI-DIM-CV-30W	30W	230	DC	EU, CN	Electronic	NC
Eaglerise	EET105LT	35-105W	230	50	EU	Electronic	Pass
ECOPAC	ELED-100-12D	100	230	100	EU	Electronic/DC	Pass
ECOPAC	ELED-180-12D	180	230	180	EU	Electronic/DC	Pass
EldoLED	LINEARdrive 100	100	120-250	50/60	EU	Electronic/DC	NC
EUCHIPS	EUP75T-1H12V-0	75	230	50/60	EU/Asia	Electronic/DC	Pass
Eutrac	99.778.1U	20-50W	220-240V	50/60	EU	Electronic	Pass
Fullham	T1M1UNV012V-60L	60	230	50	EU	DC	Pass
GATA	T50/209.23	50	220	50	Thailand	Magnetic	Pass
GIRA	TRONIC TRAFO	20-150W	230/240	50/60	EU	Electronic	Pass

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

Mfg	Model	Wattage	Voltage	Class / Frequency	Country	Transformer Type	1 Lamp
International							
Gitronica	GET 60 FI VOX	20-60W	230/240	50/60	EU	Electronic	Pass
Govena	TE40W-DIMM-LED-IP64	40	230	50	EU	Electronic	Pass
Govena	YT50	0-50	230V	50	EU	Electronic	Pass
Govena	YT60	60	230V	60	EU	Electronic	Pass
Govena	YT105	105	230V	105	EU	Electronic	Pass
Hytronik	HE4030-A	30	230	50	EU/Asia	Electronic	Pass
IBL	4670	0-70	230	50	EU	Electronic	Pass
iGuzzini	1.193.908.00	100	230	50	EU	Electronic	Pass
iGuzzini	Le Perroquet 100W B0077.01 P16772/00	100	230	50	EU	Electronic	NC
LCI	ET 3-60C	10-60	230	50	EU	Electronic	NC
LCI	DC DIM 1-10V 35W Code 1750129	35W	230	50/60	EU	Electronic/DC	Pass
Lighting-Dept	Ultra 70	70	220-240	50	Asia	Electronic	Pass
Lighting-Dept	DIM12-25	25W	220-240V	DC	EU/Asia	Electronic/DC	NC
Lighting-Dept	Micro60	20-60W	220-240V	50/60	EU/Asia	Electronic	NC

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

Mfg	Model	Wattage	Voltage	Class / Frequency	Country	Transformer Type	1 Lamp
International							
Lightech	LET75/240	20-75	240	50/60	EU/Asia	Electronic	Pass
Lightech	LET105/240	35-105	240	50/60	EU/Asia	Electronic	Pass
LTF	TU75WA	75	230	50	EU	Electronic	Pass
LTSYS	DALI-36-12-F1P1	36	230	50/60	EU/Asia	Electronic/DC	NC
LTSYS	DALI-36-12-F1P1-SORAA	36	230	50/60	EU/Asia	Electronic/DC	Pass
Meanwell	LVP-35-12	DC 12V	100-240	50/60	Taiwan	Electronic	Pass
Meanwell	PWM-90-12 (300Hz version)	90	100-305	50/60	World	Electronic	Pass
Meanwell	PWM-120-12 (300Hz version)	120	100-305	50/60	World	Electronic	Pass
Mode Lighting	MOE-050-D-240	50	230	50	EU	Electronic	Pass
Mode Lighting	MOE-075-C-240	75	240	50/60	EU	Electronic	NC
Mode Lighting	MOE-105-D-240	105	230	50	EU	Electronic	Pass
Mode Lighting	ET-040-PL-230-RD (Puma LED)	40	240	50/60	EU	Electronic	Pass
OSRAM	ET-LED 30	30	220/240	50/60	EU/Asia	Electronic	Pass
OSRAM	ET-Parrot 70	70	220-240	50	EU	Electronic	Pass
OSRAM	ET Parrot 105	35-70	220	50	Asia	Electronic	NC
OSRAM	ET-A 60	60	220-240	50	Singapore	Electronic	Pass
OSRAM	ET-P 60	20-60	220-240	50	Australia/ Thailand	Electronic	NC
OSRAM	ET-RedBack 60	60	230-240	50	Australia	Electronic	Pass
OSRAM	Halotronic HTB 105/230-240	35-105W	230-240	105	EU	Electronic	Pass
OSRAM	HTI DALI 105 DIM	35-105	230-240	50	EU	Electronic	1,4 lamps: NC 2,3 lamps: Pass
OSRAM	HTI DALIC 105/230...240DIM (Not a DALI dimmable transformer)	105	230	50/60	EU	Electronic	Pass
OSRAM	HTM 70	70	230/240	50	EU	Electronic	Pass
OSRAM	HTM 105	105W	230/240	50/60	EU,CN	Electronic	Pass
OSRAM	HTM 150	150W	230/240	50/60	EU	Electronic	Pass
OSRAM	HTN 75 230/240 I	20-75	230/240	50/60	EU Australia	Electronic	Pass
PHILIPS	CERTALINE 60W	60	230	50	EU	Electronic	Pass
Philips	ET-E 60	20-60	220-240	50	Singapore	Electronic	NC
Philips	ET-S 60	20-60	220-240	50	Thailand	Electronic	Pass

SORAA Warm Dim AR111 12V 18.5W - TRANSFORMER COMPATIBILITY - 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;

Mfg	Model	Wattage	Voltage	Class / Frequency	Country	Transformer Type	1 Lamp
International							
PHILIPS	PRIMALINE 70	35-70W	220/240	50/60	EU,CN	Electronic	Pass
PHILIPS	PRIMALINE 105	35-105W	230	50/60	EU,CN	Electronic	Pass
Quanzhou Smarts Electronic & Technology Co	SMT-012-030VM	30W	100-265V	50/60	EU,CN	Electronic	Pass
Racer	RCT 50	60	220	50	Thailand	Magnetic	Pass
Soraa	Optima TCVW-P-12-600-70-01-S3	70	230	50/60	EU, Asia, Australia	Electronic	Pass
TCI	MW70LED	70	230	50	EU	Electronic	Pass
Trafelstar	TISG 105.235-12	35-105	230	50/60	EU	Electronic	NC
Transtec	HP-300	300	230	50/60	EU	Magnetic	Pass
Tridonic	TE-0105 one4all sc	20-105W	230-240	50/60	EU, APAC	Electronic	NC
Tridonic	TE-0105 U 1-10V sc	20-105W	230-240	50/60	EU, APAC	Electronic	NC
Truelux	AN12VPWM	0-20W	100-277V	50/60	EU	Electronic	Pass
Truelux	DA12VPWM	0-20W	100-277V	50/60	EU	Electronic	Pass
Truelux	PH12VLN	0-50	230V	50	EU	Electronic	Pass
Varilight	YT50	0-50	230V	50	EU	Electronic	Pass
Varilight	YT50LZ	0-50	230	50	EU	Electronic	Pass
Vossloh Schwabe	EST105	20-105	230	50	EU & Australia	Electronic	Pass
Vossloh Schwabe	Liteline EST70/12.380	20-70W	230	50	EU	Electronic	Pass
Voltmaster	VMD30012EU	35~300	230	50	EU	Magnetic	NC
V-TAC	VT-22045 (SKU 3090)	45	90-264Vac	50/60	EU	Electronic	Pass

SORAA AR111 12V 18.5W - TRANSFORMER COMPATIBILITY - International

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%	(*)

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

Transformer manufacturer ↓	Transformer model ↓	Transf. type ↓	← Number of lamps per transformer	Dimmer →	Helvar Digidim 452	Helvar Digidim 454	Lutron Energi Svr Node QSNE-4A-D	Lutron Grafik Eye QS QSGR +ELVI module	Philips Dynalite DGLEDMA01	Varilight V-PRO JQP401W
				Dimming Mode →	Trailing	Trailing	Trailing	Trailing	Trailing	Trailing
BLV	nr. 45600101	Electronic	1		0%	3%	NC	5%	10%	8%
Osram	ET-LED 30	Electronic	1		0%	3%	NC	7%	9%	NC

SORAA AR111 12V 18.5W - 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