



Electrical compatibility – Warm Dim MR16 12V GU5.3 lamps - Japan

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Scope

This document provides the basic guidelines regards electrical compatibility of SORAA 12V MR16 lamps and compatibility tables for transformers and dimmers.

Transformer Compatibility

SORAA 12V MR16 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.

For transformer-lamp compatibility, Soraa only tests up to 5 transformers per circuit. Consult Soraa, controls provider and transformer manufacturer for latest compatibility when installing 5 or more fixtures per circuit. Lamp performance may vary based on field conditions, including but not limited to THD, shared neutral wires, power-quality. Whenever possible, test lamps in-situ to verify satisfactory performance.

Dimmer Compatibility

SORAA 12V MR16 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.

The percentages for each transformer/dimmer combination in the compatibility tables are the percentage of measured 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. We have added the maximum amount of MR16 lamps we recommend for each transformer in the transformer compatibility tables.
5. For dimmers, we recommend to use a 2.0 de-rating factor forward phase dimmers with magnetic transformers; and a 4.0 de-rating factor for incandescent/halogen reverse phase dimmers driving Low Voltage lamps on electronic transformers.

For example for a 500W forward phase dimmer it would mean $500/2=250W$ of LED, so an estimated maximum of 33 lamps 7.5W.

For example for a 400W reverse phase dimmer it would mean $400/4=100W$ of LED, so an estimated maximum of 13 lamps 7.5W.

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 MR16 12V 7.5W - TRANSFORMER COMPATIBILITY LIST - Japan

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 up to the maximum lamp wattage limit;

Transformer Brand	Transformer Model	Transformer Wattage	Input Voltage (VAC)	Transformer Type	7.5W		Maximum Number of 7.5-Watt Lamps per Transformer
Japan					Free Air or Open Fixture	Enclosed Fixture	
DAIKO	A/F 53179	75	100	Electronic	PASS	PASS	6
DAIKO	DP-36282E	75	100	Electronic	PASS	PASS	7
ENDO	X-223B	35	100	Electronic	PASS	PASS	3
ENDO	X-224B	75	100	Electronic	PASS	PASS	7
ENDO	X-228B	75	100	Electronic	PASS	PASS	6
GLEX	Z6129	50	100	Electronic	PASS	PASS	4
GLEX	Z6132	35	100	Electronic	PASS	PASS	3
GLEX	Z6149	50	100	Electronic	PASS	PASS	4
IWASAKI	DTE12651	65	100	Electronic	PASS	PASS	5
Japan Lighting	JTR-LA1-07-B1	7.5	100	Electronic DC	PASS	PASS	1
Japan Lighting	JTR-LA1-37-B1	47	100	Electronic DC	PASS	PASS	4
Koizumi	AEE690156	75	100	Electronic	PASS	PASS	6
MAXRAY	OPO 1010-70	50	100	Electronic	PASS	2 lamp min	4
National	NK00813	50	100	Electronic	PASS	PASS	4
ODELIC	OJ068016 M13040	75	100	Electronic	PASS	PASS	6
RAL (Ricardo Architectural)	ES012-V012-OE	12	100-242	Electronic DC	PASS	PASS	1
Tokyo Trans	HSDL 35-12	35	100	Electronic	PASS	2 lamp min	3
TOSHIBA	DTF-36	35	100	Electronic	PASS	PASS	3
Tozai Denko	LA1-30-B1 (*)	30	100	Electronic	PASS	PASS	2
Unity	T-1275TH	75	100	Electronic	PASS	PASS	8
USHIO SPAX	TR-E055D	55	100	Electronic	PASS	PASS	5
USHIO SPAX	TR-E090D	90	100	Electronic	PASS	PASS	8

Notes:

- Compatibility tests are conducted by Soraa under bench conditions as guidance for the user; results at the application site may differ due to variability in usage conditions or in transformer components/manufacturing
- 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 transformer is not listed, please consult with Soraa before making recommendations to the end customer
- For transformer-lamp compatibility, Soraa only tests up to 5 transformers per circuit. Consult Soraa, controls provider and transformer manufacturer for latest compatibility when installing 5 or more fixtures per circuit. Lamp performance may vary based on field conditions, including but not limited to THD, shared neutral wires, power-quality. Whenever possible, test lamps in-situ to verify satisfactory performance.
- 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.
- (AS) means "Any Suffix"
- (*1) Soraa does not recommend 277V Electronic transformers for dimming applications, unless stated on our dimming compatibility list.
- (*2) Hatch does not warranty their electronic 277V transformers when used with LED lamps unless their product number ends with -LED
- (*) This transformer added to the compatibility list as of this Revision

SORAA WARM DIM MR16 12V 7.5W - DIMMING COMPATIBILITY LIST - Japan

Transformer manufacturer ↓	Transformer model ↓	Transformer type ↓	Number of lamps per transformer ←	Dimmer →	Daiko LZA-90306E	Koizumi AE36745E-C	Maxray OP01346-00	Odelic LC 211 (LED)	Panasonic NQ20615	Panasonic WT57511W	Panasonic WTA 57583W	Panasonic WTC57523W	Panasonic WTC575251	Panasonic WTY54110W	TES LIGHTING TLC-0003
				Dimming Mode →	leading	leading	trailing	trailing	trailing	leading	trailing	leading	leading	trailing	leading
Japan Lighting	JTR-LA1-37-B1	Electronic/DC	1		19%	9%	14%	15%	11%	NC	21%	13%	NC	14%	14%
Tozai Denko	LA1-30-B1	Electronic	1		NC	7%	11%	17%	11%	NC	NC	NC	NC	9%	10%
KOIZUMI	AEE690156	Electronic	1		NC	9%		NC		NC	NC	NC	NC		NC
PANASONIC	HNK00844	Electronic	1		NC	NC		7%		17%	25%	17%	NC		13%

SORAA WARM DIM MR16 12V 7.5W - DIMMING COMPATIBILITY LIST - Japan

Notes:

- Compatibility tests are conducted by Soraa (unless stated otherwise) under bench conditions as guidance for the user.
- Regards compatibility tests conducted by dimmer/transformer manufacturer, please contact Soraa or the manufacturer for more details and/or reports.
- Results at the application site may differ due to variability in usage conditions or in dimmer or transformer components/manufacturing.
- 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).
- Transformer maximum load listed in the transformer compatibility table should not be exceeded.
- If the dimmer and/or transformer is not listed, please consult with Soraa before making recommendations to the end customer.
- (*) 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