

RN-TVI Control Interface

Phase Control to 0–10 V $\overline{\text{V}}$ Rated at: 220 - 240 V \sim 50/60 Hz

Important Notes

- Danger!** Always turn OFF the circuit breakers/MCB or remove the main fuses from the power line before doing any work. Failure to do so can result in serious personal injury. **Disconnect all power sources before servicing unit.**
- This interface must be installed by a qualified electrician in accordance with all applicable regulations.
- Improper wiring can result in personal injury, damage to the interface, or damage to other equipment.
- Use up to two interfaces per Rania® Dimmer.
- Operate between 0 °C and 40 °C. For indoor use only.
- For new installations, test the load for short circuits first.
- For optimum performance the settings on the Rania must be changed.

Description

The RN-TVI provides 0-10 V $\overline{\text{V}}$ control and ballast switching capabilities in one enclosure. The RN-TVI gives Rania Dimmers the ability to control any 0-10 V $\overline{\text{V}}$ ballasts (ballast must provide 0-10 V $\overline{\text{V}}$ sourcing of current) and provides switching relays that can handle the in-rush current for a circuit of ballasts. The RN-TVI gives a Rania Dimmer the ability to both dim and switch electronic ballasts. The RN-TVI can also be used to switch any of the load types listed below.

Source/Load Type	Max. Unit Load
Fluorescent:	
Electronic Capacitive Non-Dim	10 A
0–10 V Dimmable Ballasts	10 A
Incandescent	10 A
Low-Voltage	10 A
Metal Halide	10 A
Neon/Cold Cathode	10 A
Motors	1/2 HP

Technical Assistance

If you have questions concerning the installation or operation of this product, call **Lutron's Headquarters**. Please provide exact model number when calling.

Lutron EA LTD

Tel: +44 (0) 207 702 0657
Fax: +44 (0) 207 480 6899
www.lutron.com/europe

Lutron GL LTD

Tel: +852.2104.7733
Fax: +852.2104.7633
www.lutron.com/asia

FREEPHONE:

U.K.: 0800.282107
Spain: 900.974452
Northern China: 10.800.712.1536
Southern China: 10.800.120.1536
Macau: 0800.401
Hong Kong: 800.901.849
Singapore: 800.120.4491
Taiwan: 00.801.137.737
Thailand: 001.800.120.665853
Indonesia: 001.803.011.3994

Limited Warranty

Lutron EA Ltd. ("Lutron EA") warrants each unit to be free from defects in material and workmanship and to perform under normal use and service. To the extent permitted by law, Lutron EA and Lutron Electronics Co. Inc. ("Lutron") make no warranties or representations as to the units except as set forth herein. This warranty shall run for a period of two years from the date of purchase and Lutron's obligations under this warranty are limited to remedying any defect, replacing any defective part or replacement (at Lutron EA's sole option) and shall be effective only if the defective unit is shipped to Lutron EA postage prepaid within 24 months after purchase of the unit. Repair or replacement of the unit does not affect the expiry date of the warranty. This warranty does not cover damage or deficiencies due to abuse, misuse, inadequate wiring or insulation or use or installation other than in accordance with instructions accompanying the unit.

To the extent permitted by law, neither Lutron EA nor Lutron shall be liable for any other loss or damage including consequential or special loss or damages, loss of profits, loss of income, or loss of contracts arising out of or relating to the supply of the unit or the use of the unit and the purchaser assumes and will hold harmless Lutron EA and Lutron in respect of all such loss or damage. Nothing in this warranty shall have the effect of limiting or excluding Lutron EA's or Lutron's liability for fraud or for death or personal injury resulting from its own negligence, or any other liability, if and to the extent that the same may not be limited or excluded as a matter of law.

This warranty does not affect the statutory rights of consumer purchasers of this product.

Although every attempt is made to ensure that catalogue information is accurate and up-to-date, please check with Lutron EA before specifying or purchasing this equipment to confirm availability, exact specifications, and suitability for your application.

This product may be covered under one or more of the following European patents: EP0293569; EP0427709; and corresponding patents in other countries.

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Installation

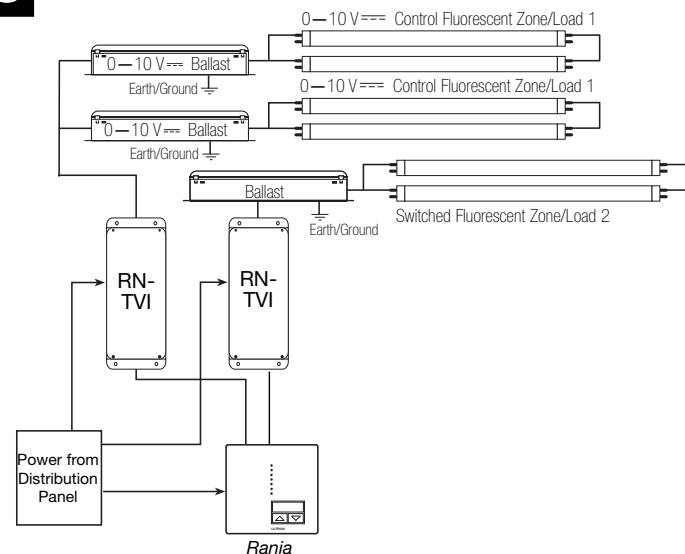
1 WARNING: Turn power OFF at MCB (circuit breaker) or fuse box.

Multiple feeds may enter this enclosure. Locate and lock each feed circuit breaker/MCB in the OFF position before wiring the interface.

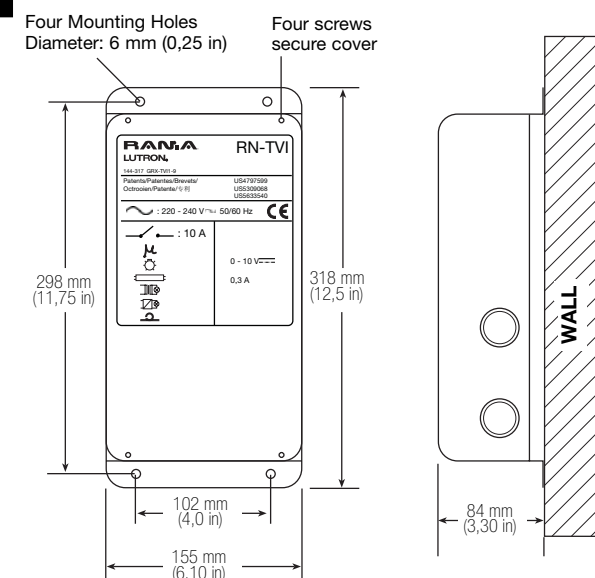
2 Mounting

- Find a suitable location for mounting.
- Decide on the proper location for the RN-TVI (NEMA Type 1 enclosure, indoor use only). See System Wiring Layout below.
 - The environment where the RN-TVI is placed must have an ambient temperature range of 0 °C–40 °C (32 °F–104 °F).
 - Mount the enclosure vertically on a wall (screws not provided). See Mounting Diagram below.
 - Mounting method must be able to support weight and forces applied during installation.
 - Internal relays will click while in operation — mount where audible noise is acceptable.

3 System Wiring Layout

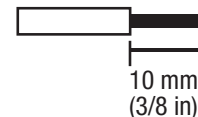


4 Mounting Diagram



5 220 - 240 V- Control Interface / Important Installation Information

- Proper short circuit and overload protection must be provided at the distribution panel. You can use up to a 16 A maximum circuit breaker/MCB or equivalent (tripping curve C according to IEC 898/EN60898 is recommended) with adequate short circuit breaking capacity for your installation.
- Terminal blocks are rated for two 0.5–2.5 mm² (#12–22 AWG) wires per terminal.
- Strip 10 mm (3/8 in) of insulation from wires.
- Wiring Diagram (Step 7) shows a RN-TVI wired from 2 separate distribution panels that may be different phases or voltages.
- When wiring from 1 distribution panel take L1, L2, N1 and N2 from the same panel. If the power requirements of the complete system is less than an MCB/Circuit breaker rating, one feed can be jumpered inside the enclosure from L1 to L2 and from N1 to N2.
- Use the internal terminal block label to see where to land wires.



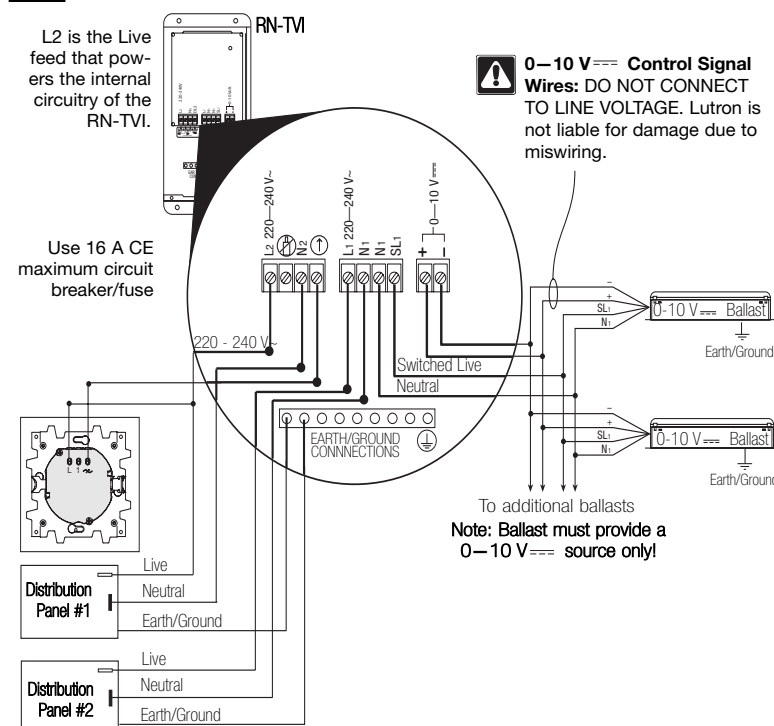
The label shows two separate Live terminals (L1 & L2).

- L1 is the Live feed to power the lighting load.
- L2 is the Live feed that powers internal circuitry of the RN-TVI. **The power feed to the Control Unit and L2 of the RN-TVI must be the same phase!**
- Not all terminal blocks receive a connection.
- Class 2/PELV, 0–10 V $\overline{\text{V}}$ wiring from a ballast to the RN-TVI must be separated from the power wiring. Enter the Class 2/PELV wires through the knockout adjacent to the 0–10 V $\overline{\text{V}}$ terminal blocks.
- The Nomex® barrier ensures separation and is flexible to allow access to the terminals. The barrier must be in place when installation is complete.

6 System Wiring Layout

- L2 220 - 240 V- Power input for RN-TVI control (line/mains voltage **must be 220 - 240 V-**)
No connect - Do not connect anything to this terminal
- N2 Neutral for RN-TVI control
Dimmed input from Rania
- L1 Powered input for lighting load
N1 Neutral for lighting load (2 terminals provided and internally tied together — one for input neutral and one for load neutral)
- SL1 Switched output to power lighting load
- + - 0–10 V $\overline{\text{V}}$ control signal wires (**ballast must provide a 0–10 V $\overline{\text{V}}$ source only**)

7 Wiring Diagram: RN-TVI – 2 Distribution Panels (when wiring from 1 distribution panel take both live and neutral feeds from panel 1).



Operation

- After wiring is complete, supply power to the RN-TVI to check for proper operation.
 - With the cover removed, an LED will provide visual feedback about the operation of the system.
 - When power is first applied, the LED will turn on for 8 seconds to indicate start-up mode and then start to flash in one of two ways to indicate the status of the system:
 - Standard Operation**
 - The LED will flash at a rate of twice per second to signify proper communication between the Rania and the Interface.
 - Incorrect Operation - No Active Input**
 - The LED will repeatedly turn on for 1 second then off for 1 second to indicate that there is not an active phase control input to the RN-TVI. Make sure that the Rania is ON and connected to the RN-TVI at the terminal block marked ①. Check that the Rania on the ① terminal is ON and the light level is not set at the minimum output.
 - When the LED indicates proper input of a phase control signal, then the output can be checked by looking at the load and checking operation from the Rania.

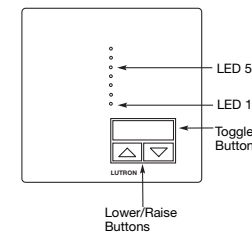
Make sure you set up the Rania to work with RN-TVI.

Changing Rania Dimmer Settings

- Switch the dimmer off by pressing the Toggle button. Ensure the Rania Dimmer is powered.

2 Put the dimmer in interface mode.

- Enter Programming Mode by pressing and holding the Lower button and the Toggle button for 3 to 5 seconds, until LED 1 starts flashing.
- Press Raise button three times until LED 4 starts flashing.
- Once LED 4 is flashing, press and hold the Raise button for 3 to 5 seconds, until LED 5 starts flashing.
- Press the Toggle button. LEDs 1 and 5 will flash.
- Press the Toggle button again. LED 1 and 5 should start flashing faster.
- Press the Raise button once to make LED 2 begin flashing. This sets the dimmer to Interface Mode.
- Select Interface Mode by pressing the Toggle button. If any LEDs are still flashing, hold down the Toggle button for 3 seconds or until all LEDs stop flashing.



3 Adjust low-end trim.

- Enter Programming Mode by pressing and holding the Lower button and the Toggle button for 3 to 5 seconds, until LED 1 starts flashing.
- Press Raise button three times until LED 4 starts flashing.
- Once LED 4 is flashing, press and hold the Raise button for 4 to 5 seconds, until LED 5 starts flashing.
- Press the Toggle button. LEDs 1 and 5 will flash.
- Press the Raise button once, so LED 2 is flashing as well as LED 5.
- Press the Toggle button. Now only LED 4 should be flashing.
- Using the Raise/Lower buttons, dim the lamp down to find the point where changes to the dimmer level result in no perceptible change in the light output from the load.
- Press the Toggle button. If any LEDs are still flashing, hold down the Toggle button for 3 seconds or until all LEDs stop flashing.
- If at any time you make a mistake, shut off power, restore factory defaults and retry. To bring back factory defaults, turn the dimmer to the off state, press and hold the lower button immediately followed by pressing and holding the toggle button until the bottom LED blinks. Release both buttons. Press and hold the raise and the toggle buttons at the same time until the unit resets.

Troubleshooting Guide

Symptom	Possible Cause	Solution
Control Unit will not dim 0–10 V $\overline{\text{V}}$ Ballast	Miswire	Verify that LED pulses twice per second. If not, check wiring from Rania to the Interface.
	Power is OFF	Make sure that the Rania Unit is on.
	Miswire	Check for proper polarity of 0–10 V $\overline{\text{V}}$ signals at terminal blocks. Does it match what is at every ballast? A miswire at any ballast will cause all ballasts to go to the low end.
	Incorrect Control Setup	Rania Unit is not configured correctly. See "Changing Rania Settings".
Light does not switch	Miswire	Check that the SL1 Connection goes to the ballasts.
	Miswire	Check that the ① connection is actually wired to a Rania.
	Power is OFF	Restore power to the RN-TVI.
	Bulb(s)/Lamp(s) burned out	Replace bulb(s)/lamp(s).
	Rania	Ensure Rania Dimmer is set-up correctly.
Light does not switch off	Miswire	Load is not connected to SL1 terminal.
	Miswire	Check that the ① connection is actually wired to a Rania input.
Lights turn on/off unexpectedly	RN-TVI is overloaded	Check for excess load. Proper mounting and adequate air convection. Allow unit to cool.
	Load type	Confirm that the load type being switched/dimmed is compatible with the RN-TVI.
LED is not illuminated	No Power Input	Check that power is applied to the interface.