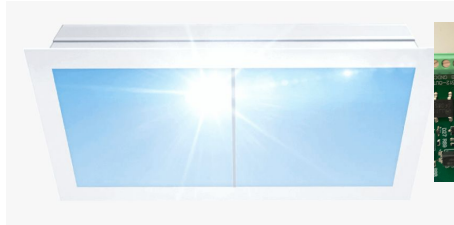# Innerscene Virtual Sun Model A7 Controls User Manual

Virtual Sun Multi-unit configuration

Labeled "Master"

Master has built-in clock
And pre-programmed with
longitude & latitude prior to shipment

Clients units synchronize with
master through UDP over an IP
network

Cat5/6 + RJ45

**0-10V Dimmer
(sink source)**

0-10V Dimmer Examples:
- Lutron -> 0-10V PowPak
- Casambi CBU-ASD,A2D
- Lunatone DALI 0-10V LE

**Ethernet switch 100/1000
mbps**
No internet connection required but
recommended for future expansion

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Multiple room example
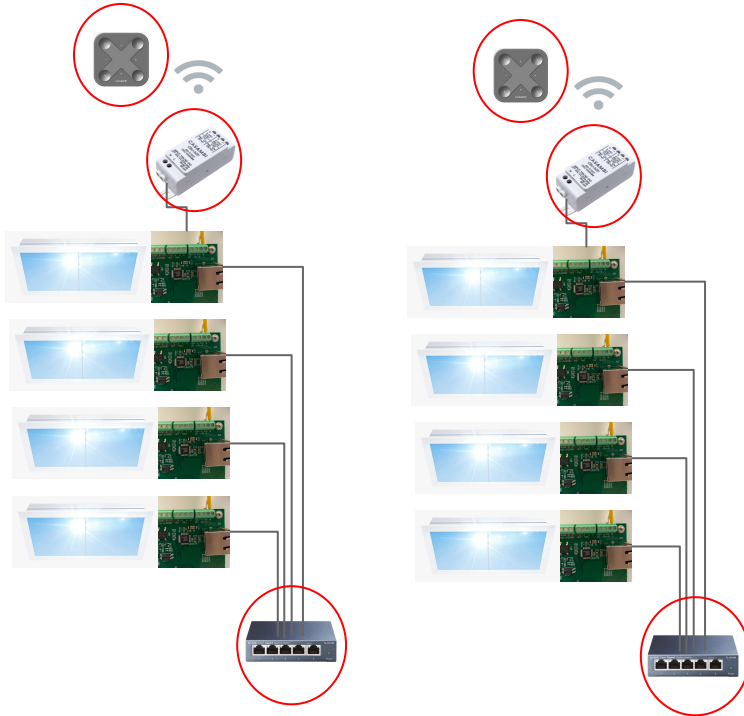
In this example 2 rooms have 4 fixtures each with independent control over each group.
Each group of 4 units has one unit designed as a "Master Unit" and is connected to a Cassambi 0-10V dimmer model A2D (or ASR) which as a source sink.

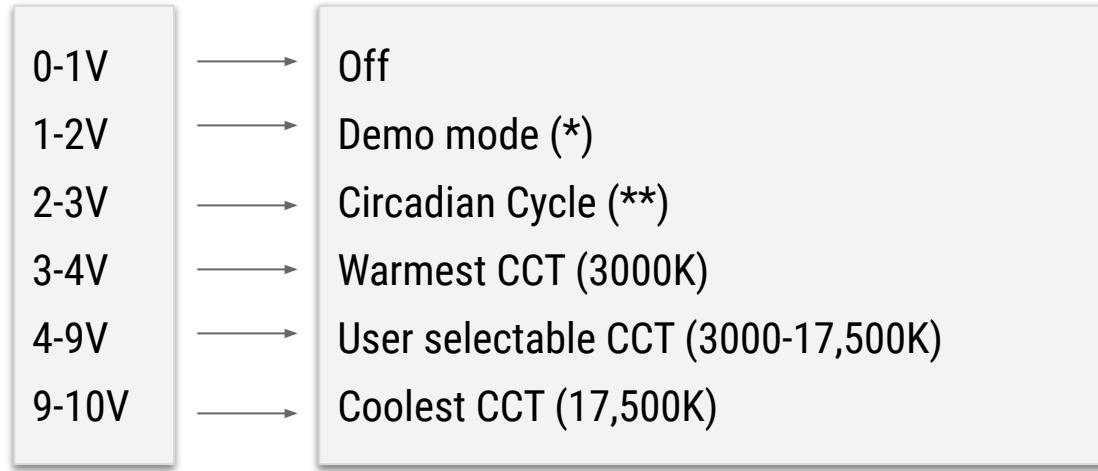Each room requires it's 1 0-10V dimmer and 1 ethernet switch.

At the time of purchase, please specify how many Master units are required.

Not supplied by Innerscene unless specifically ordered

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0-10V Dimmer Notes

- 0-10V (sometimes labeled 1-10V) dimmers come in 3 varieties

    1. Dimmer module acts as current source
       These dimmer modules are not compatible with Virtual Sun Model A7

    2. Dimmer module acts as current sink
       Compatible with Virtual Sun Model A7

    3. Dimmer auto-detects current and can act as both sink & source
       Compatible with Virtual Sun Model A7

- Because the Model A7 provides source current, some varieties of dimmers may not require any power connection. Example of an inexpensive unpowered dimmer switch.

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0-10V mapping to Modes

| Voltage	Mode
0-1V	→ Off
1-2V	→ Demo mode (*)
2-3V	→ Circadian Cycle (**)
3-4V	→ Warmest CCT (3000K)
4-9V	→ User selectable CCT (3000-17,500K)
9-10V	→ Coolest CCT (17,500K)

- Demo mode: 24 hour circadian cycle shown in 1 minute
- Circadian Cycle: Unit will adjust CCT automatically based on sunset/sunrise calculated using the time of day and pre-programmed earth longitude/latitude.
- The moon setting can not be accessed directly, it is shown during Demo & Circadian Cycle modes

At present local time zones are programmed prior to dispatch.   A web user interface that allows further configuration on-site using wireless Bluetooth communication is currently under development.

Note: Virtual Sun controller board **sources current** for the 0-10V dimmer, the 0-10V dimmer must **sink current** to interoperate (often referred to as 1-10V).

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DALI support

- Presently DALI is supported by a DALI->0-10V adapter such as Lunatone DALI 0-10V LE.
- We are developing firmware updates that will directly support DALI Type 6 & 8 to allow independent control over CTT and Brightness, expected to be available later in 2021. This update is firmware-only and doesn't require any hardware changes.
- To allow for future support of DT6/8, wire to both the 0-10V and DALI terminal blocks on the controller board of the Master unit. Currently direct DALI commands will be ignored and only 0-10V signals will be responded to, when the firmware upgrade is available it can be deployed to units over ethernet or Bluetooth.
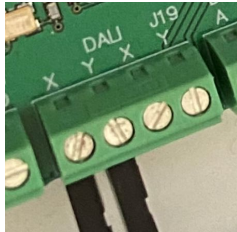
DALI connection terminal

![INNERSCENE]

Ethernet switch

- An ethernet switch is required for 2+ unit installs, it is used to:
    - Synchronize time between multiple units
    - Relay color change request from a single 0-10V or DALI controller
    - Synchronize dimming in the event of overheating
    - Allow technicians to gather data and diagnose problems

- Any 100/1000 mbps switch can be used
- No internet connection required but recommended to allow for future expansion
    - At present, units shipped with pre-configured static IP addresses so no configuration is required at the time of installation. In the future, we may probe to see if DHCP is available to allow for internet connectivity.
- Ethernet switch can be placed in electrical closet, or in the ceiling next to the Virtual Sun units

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Settling in period (48 hours)

- Virtual Sun relies on parts that must remain perfectly flat to project an accurate image of the sun

- After first installing Virtual Sun, you may see the sun look elliptical and distorted and the sunbeams on the floor/walls uneven. This is expected.

- Please allow units to run continuously at full brightness (blue sky setting) for a period of 48 hours after installed in the correct orientation.   This will cause various plastic parts to warm up and become flexible. While these parts are warm, they will be pressed flat and the distortion should disappear.

- Virtual sun units only need to go through this settling period once after install.

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Glass Cleaning

A7 units outer surface is glass which has an anti-reflective optical coating typically found on camera lenses and eye glasses.   This optical coating can be damaged if chemicals or abrasive cloths are used to clean the surface.

Don't use:

-    Glass or material cleaners
-    Abrasive cloths

Do use:

-    Isopropyl alcohol (preferred) or soapy water
-    Microfiber cloths

If in doubt, follow instructions for cleaning camera lenses and eyeglasses

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