
Crestron Best Practices for Designing Fluorescent Fixtures

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Crestron Best Practices for Designing Fluorescent Fixtures

Many factors influence the performance and reliability of a fluorescent dimming fixture. The following is a guide that must be followed when installing Crestron® ballasts into fluorescent fixtures. Failure to follow the guidelines can lead to numerous issues such as lamp failure, flickering, or failure for lamps to turn on reliably.

Sockets

Use rapid start (non-shunted) knife edge sockets with a rotary locking mechanism that comply with IEC 60400.

Instant start sockets must not be used.

Knife edge sockets are preferred over flat-contact sockets as they make better contact with lamp pins that may form a resistive oxidization layer.

Knife Edge Socket



Flat-Contact Socket



Sockets with rotary locking mechanisms are preferred over push in sockets to ensure lamp remains seated in the socket.

Sockets that comply with IEC 60400 have been tested to meet strict quality standards and are typically marked with a logo such as:

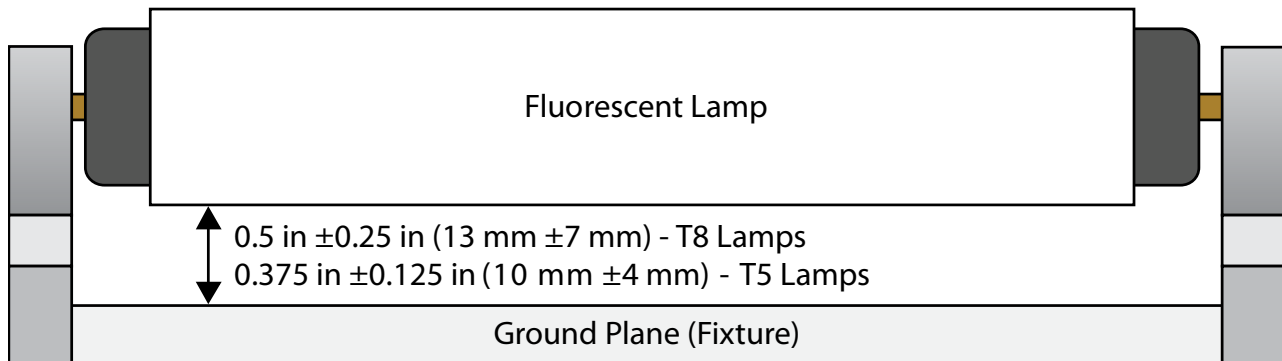


Poor contact between lamp pins and socket leads to:

- Insufficient heating of filament when dimming or turning on
 - ⇒ This may cause lamp to fail to strike on or to shut down
 - ⇒ This may cause premature aging of the lamp, leading to blackened ends and early failure
- Shutdown of ballast - Loss of contact between lamp pin and socket causes the ballast to shut down to prevent arcing and possible overheating of sockets

Lamp Mounting Height

When installed in fixture, the distance between lamp outer surface and grounded metal fixture is critical. Sockets used must ensure the distance between lamp and ground plane complies:



Required distance between lamp and ground plane:

- T8 Lamp – 0.5 in ±0.25 in (13 mm ±7 mm)
- T5 Lamp – 0.375 in ± 0.128 in (10 mm ±4 mm)

Positioning lamp too far from ground plane results in:

- Striations or flickering
- Non-uniform light output over length of lamp
- Inability to strike on

Positioning lamp too close to ground plane results in:

- Incorrect light output from lamp
- Lamp darkening at ends and premature failure of lamps

Lamp should never be in contact with the metal ground plane.

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Lamp Wiring

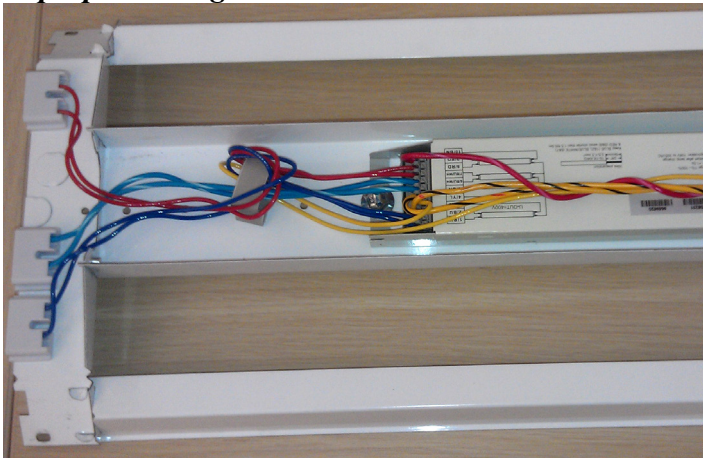
Wiring between ballast and lamp sockets must be kept as short as possible.

BALLAST	BALLAST WIRE	MAXIMUM LENGTH	NOTES
1-Lamp	Red Blue	18 in (~0.5 m) 42 in (~1 m)	
2-Lamp	Red, Blue Yellow, Brown	18 in (~0.5 m) 42 in (~1 m)	Keep Red and Blue wires the same length
3-Lamp	Red, Blue, Blue/White Yellow, Brown	18 in (~0.5 m) 42 in (~1 m)	Keep Red, Blue, and Blue/White wires the same length

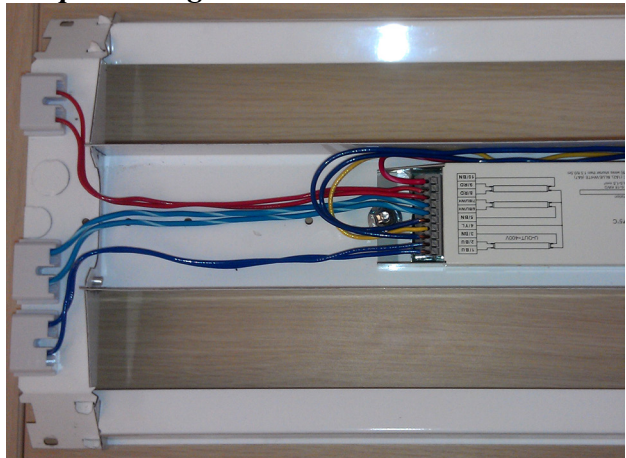
Keep the following in mind when wiring between ballast and lamp sockets:

- Wires must not be tightly bundled together.
- Do not use cable ties to hold wires together.
- Wires must not be twisted together.
- Wires must not be run next to lamps. They should be run on opposite side of metal reflector.
- Wires between ballast and lamp must not be run through metal conduit.
- Separate ac wires from lamp wires.
- Ensure wiring does not get pinched in fixture during installation as pierced insulation can cause ballast to fail.

Improper Wiring



Proper Wiring



Ballast Grounding

Ballast must be grounded to fixture.

Failure to ground ballast well results in poor dimming performance and possible failure of ballast over time.

Lamp Seasoning and Replacement

Lamps must be run at full intensity for 100 hours prior to dimmed operation.

When a lamp fails, it is recommended that all lamps in the fixture be replaced and burned in again. Mixing old and new lamps causes premature failure of new lamps.

Typical sign of lamps reaching end of life are blackening at the ends.

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Printed in USA Doc. 7562A 8/14
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This document was written by the Technical Publications department at Crestron.
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