



Verifying set up for AC LED modules

1. Purpose and Objective

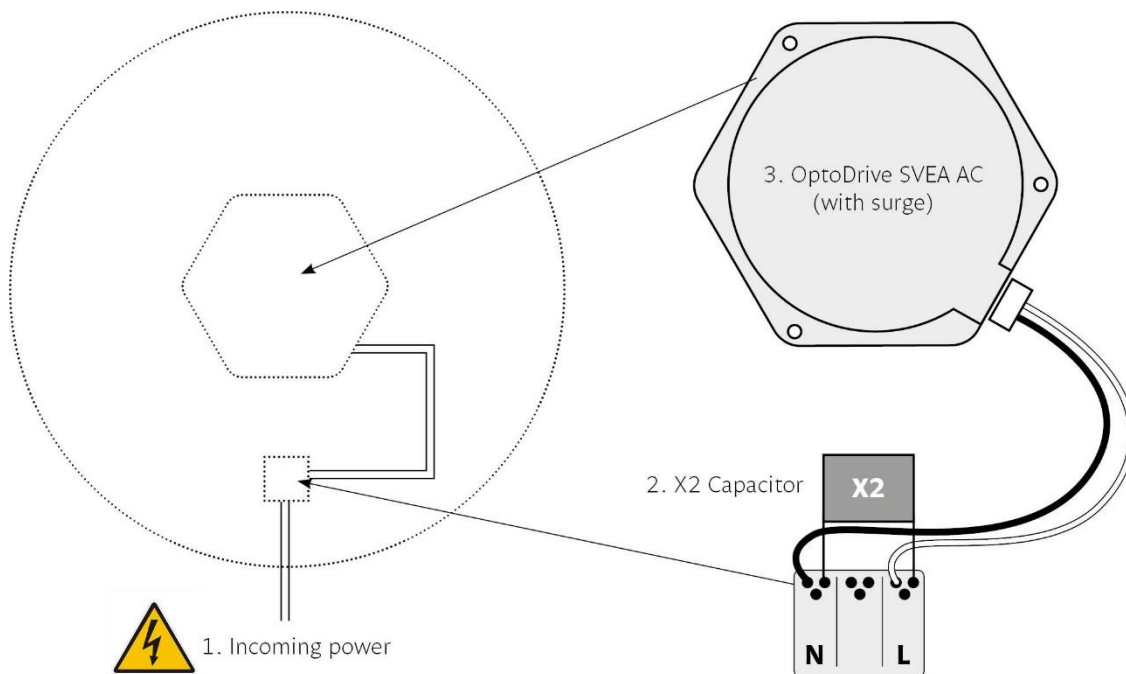
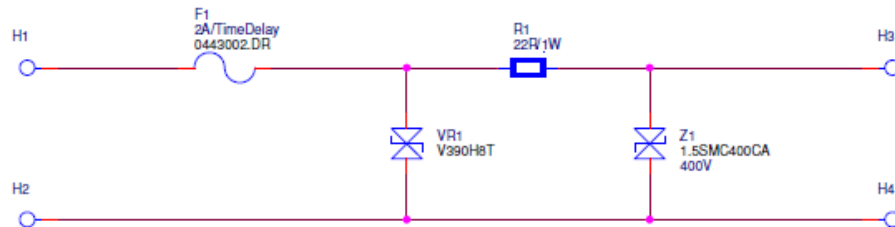
This document specifies how to connect Optodrive AC modules to achieve long life installation both with Surge, Burst and other problematic installation questions:

- What have been tested?
- How it has been tested?
- Conclusion

2. Background

The LED modules can fail when they are connected close to old type of magnetic fluorescent tube lighting or bad LED drivers. Therefor an installation guide is important for the light fitting manufacturer.

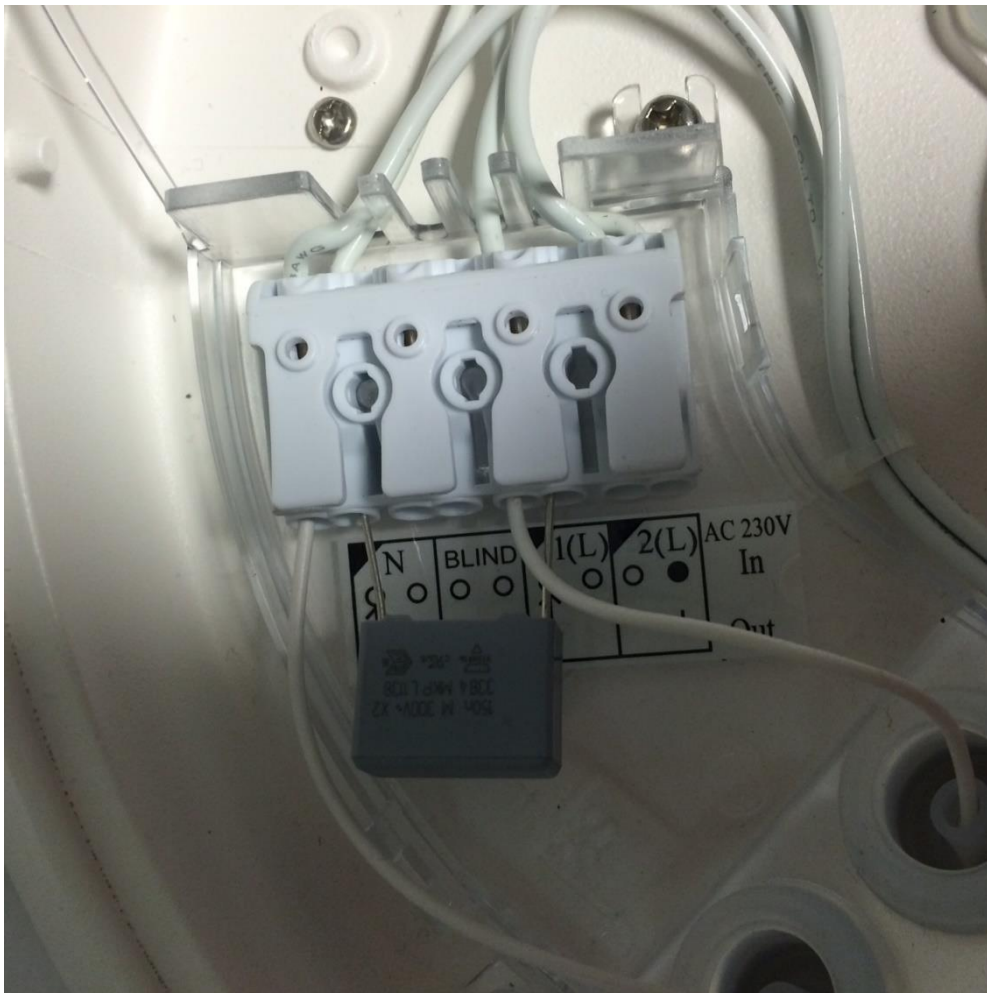
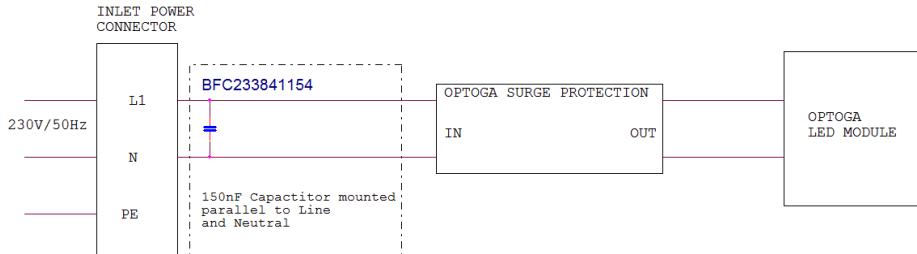
3. Design of Surge



4. Conclusion

The installation set up requires an X2 Capacitor parallel to L1 and N to handle the fast and high voltage transients generated by the magnetic ballast.

5. New set-up



X2 capacitor mounted parallel to L1 and Neutral before Surge protection box



6. Test that have been made

Tests that are made

- Fast Transient Burst test IEC 61547
 - The LED module passed the test for fast transient burst
 - The module is also tested with higher voltage than stated in IEC standard and it shows that the module withstand up to +/-2kV.

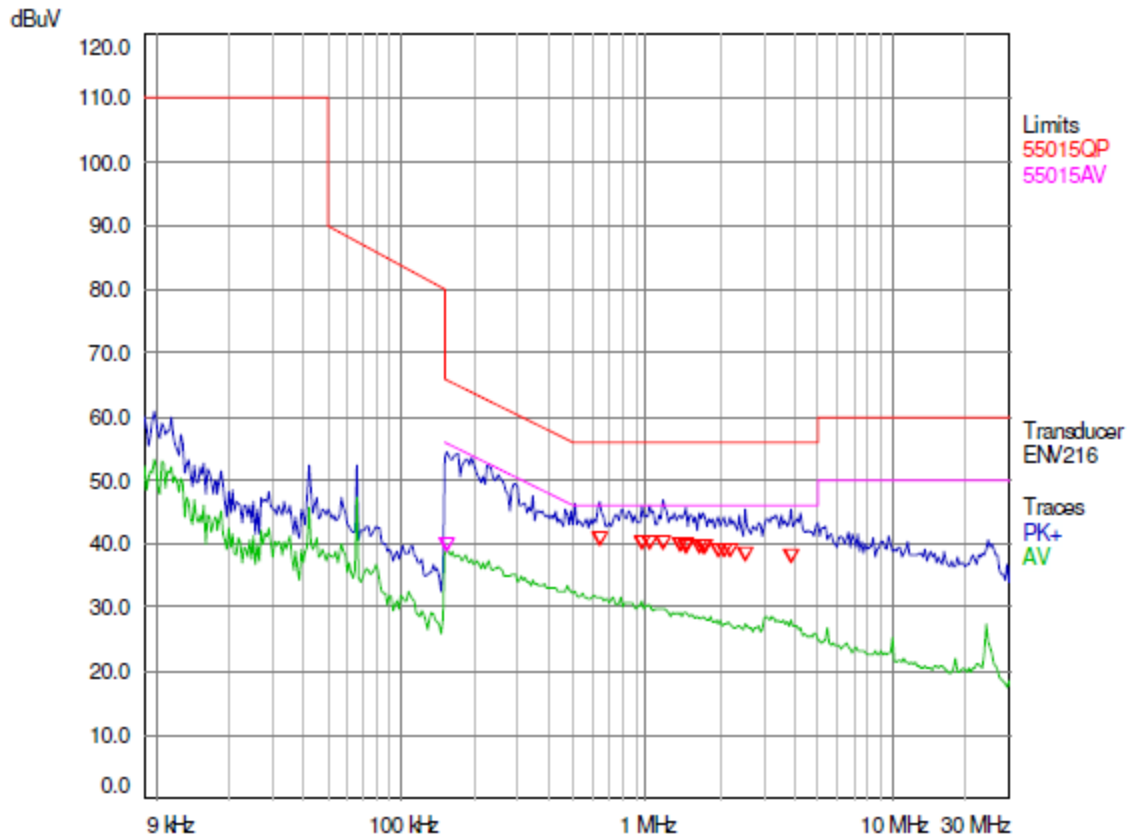
Table 6 – Fast transients – Test levels at input and output a.c. power ports

Characteristics	Test levels
Test level	±1 kV (peak)
Rise time/hold time	5/50 ns
Repetition frequency	5 kHz

- EMC IEC55015
 - The LED module passed the test for EMC



Pre-measurement Graph



- Surge Protection IEC 61000-4-5
 - The LED module passed the test at 1250V Surge



7. Continues testing

The test is ongoing from Optoga side with a set up that makes on/off 30 times per minute. This is made with magnetic ballast without filtering capacitor to simulate old fluorescent tube installations.

8. Conclusion

The test that has been made gives us a clear indication that the LED module will be working according to a required standards. The X2 capacitor has to be mounted separately. The LED module will have an improved security and robustness for Surge and fast transients bursts.

9. Change Log

Version	Date Issued	Changed
1.0	2015-02-09	Initial start-up SL
1.1	2015-02-10	Reviewed by PLI
1.2	2015-02-14	Updated the comments SL