

Product Document



Application Note

AS7221&AS7211

Luminaire Design Considerations Bluetooth Connected



Content Guide

1 General Description 3

2 Design Overview 3

3 Schematic Details for the AS7221 Smart Lighting Mgr w/BLE Assembly 6

4 Ordering & Contact Information 8

5 Copyrights & Disclaimer..... 9

6 Revision Information 10

1 General Description

This Application Note describes use of the AS7221 and AS7211 Smart Lighting Manager to design a LED Light Panel - Bluetooth/BLE connected True Color Luminaire. The resulting electronics used in the Luminaire is described¹. Note, a standard panel and small sensor controller board is using to show the fast way to get a luminaries control for cw/ww mixed LED lighting.

Smart Lighting Mgr electronics solutions:

- Single Chip ams AS7221 device with X, Y, Z true color sensing as well as a complete Luminaire color maintenance control loop based on the sensed color and other input control points
- ams TSL4531 external lux sensor as input to the AS7221 for optional Daylighting control
- Single chip Cypress semi device which is a complete Bluetooth/BLE solution for the AS7221

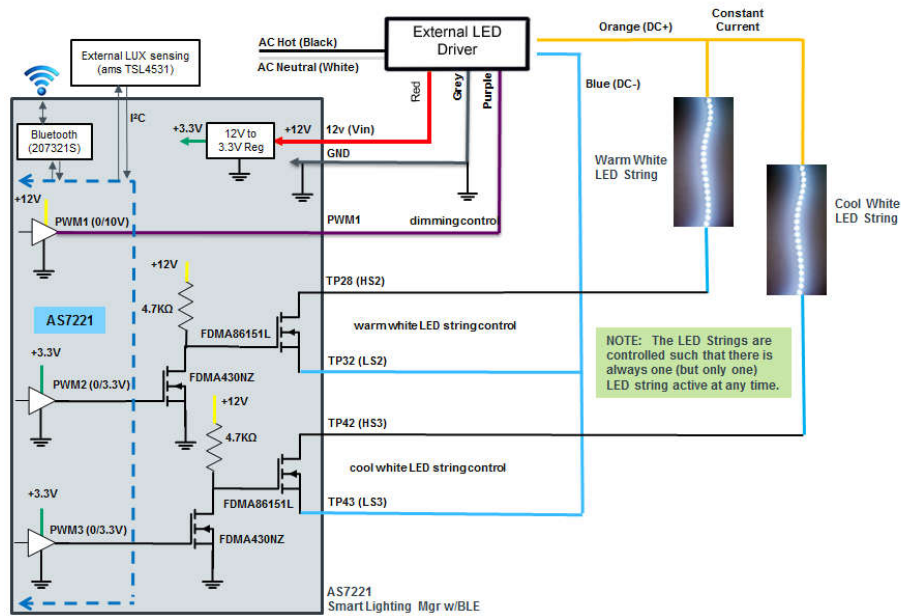
Other features of the Luminaire:

- An Universal Constant Current LED Driver with 1% dimming capability and a 12VDC/100mA auxiliary output supply
- Two strings of LEDs, 24 each. One string is warm white the other cool white, both are controlled by the Smart Lighting Mgr w/BLE assembly to maintain desired customer color temperature (2800K-5500K)
- 1x1 (1 foot by 1 foot) overall Luminaire design

2 Design Overview

The three figures in this section show both a high level view of the 1x1 Luminaire Color Tuning electrical design and mechanical mounting of the AS7221 Assembly and CITI LED Driver.

Figure 1: High Level View of the 1x1 Luminaire LED Color Tuning



¹ For more details and basics please see also the principal application note, named "AS7211&AS7221 Luminaire Design Considerations".

When selecting an external LED driver, please note. The LED driver must realize that the negative LED driver output is equal to the GND potential of the control input, or at the most corresponds to the voltage drop across the internal shunt of the LED driver. The stroke, negative LED driver output to GND must not exceed 4V, otherwise the output stages of the SLIK will be destroyed.

For external LUX sensing, use an ams TSL4531 Board. Details for the installation refer the guide: AS7221_Dashboard_install and operation_xxx.pdf.

Figure 2: 1x1 Luminaire Frame w/LEDs – top and bottom view

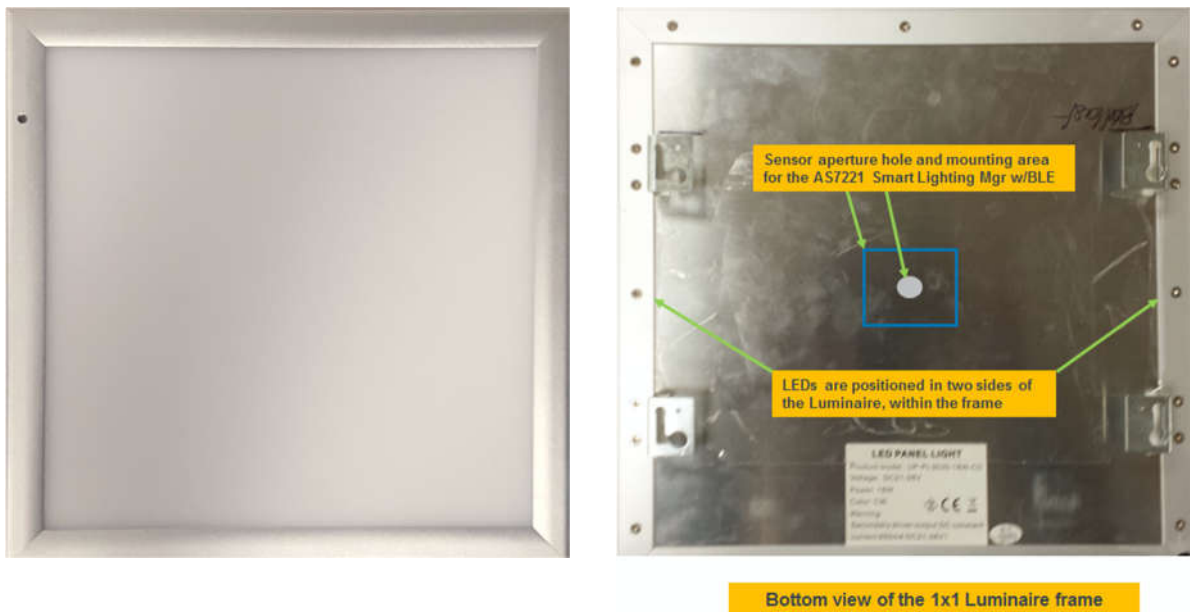
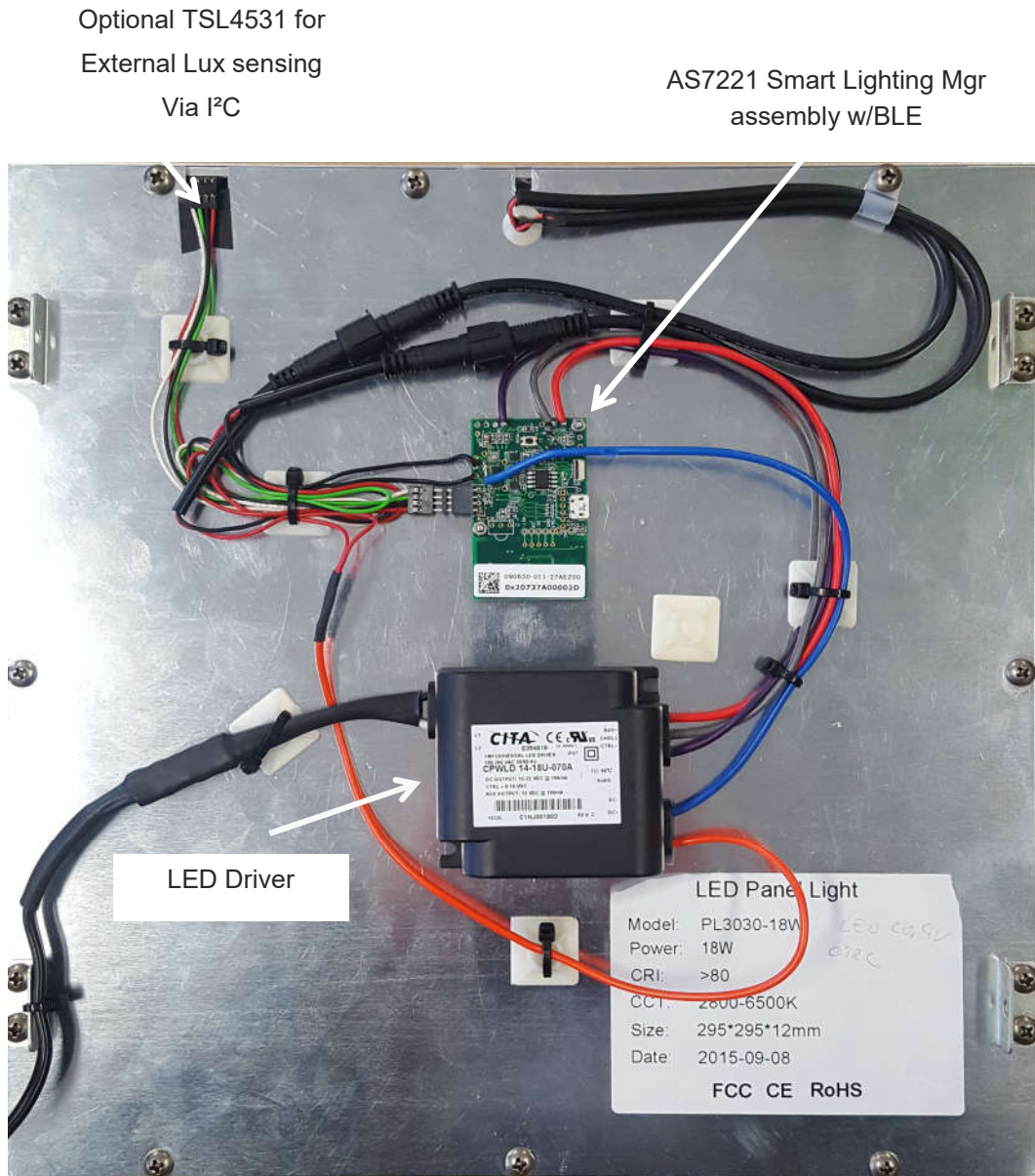


Figure 3: Final Assembly of the 1x1 Luminaire



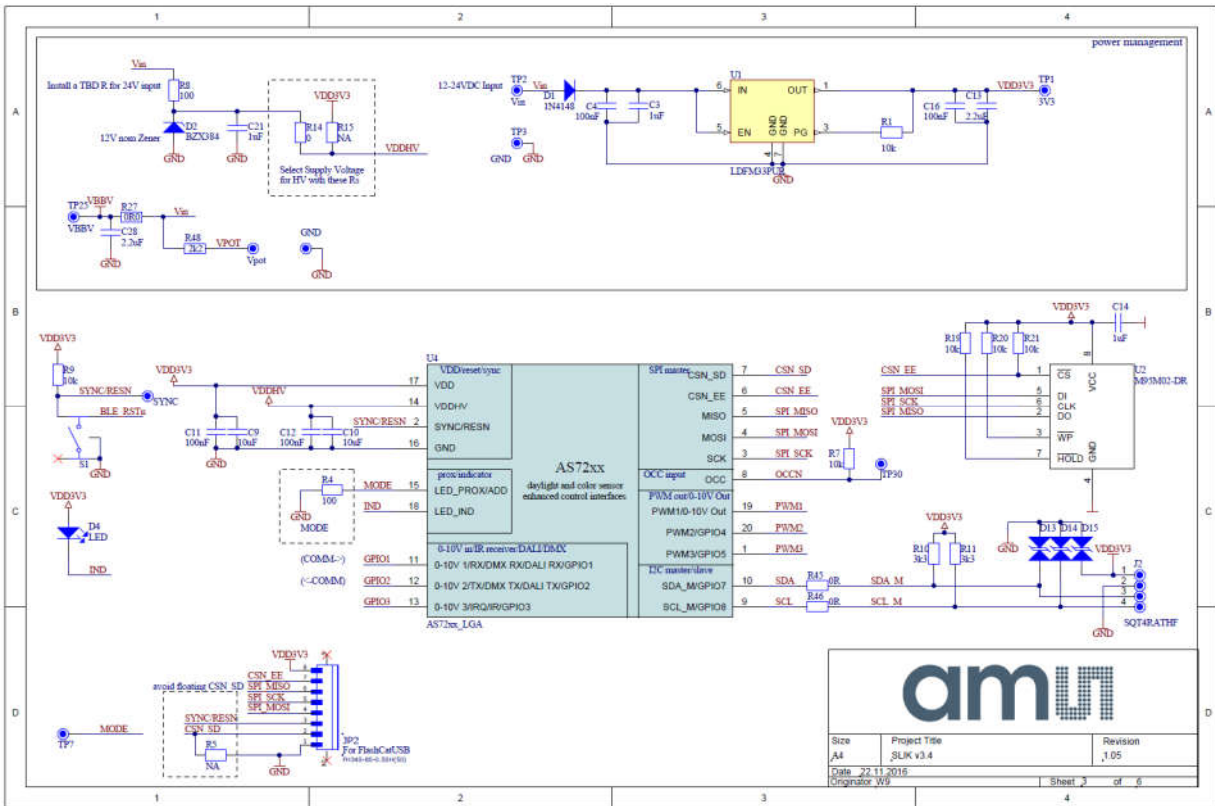
Bottom view of the assembled 1x1 Luminaire; includes AS7221 SmartLighting;Manager w/BLE, Daylighting and AC/DC LED Driver

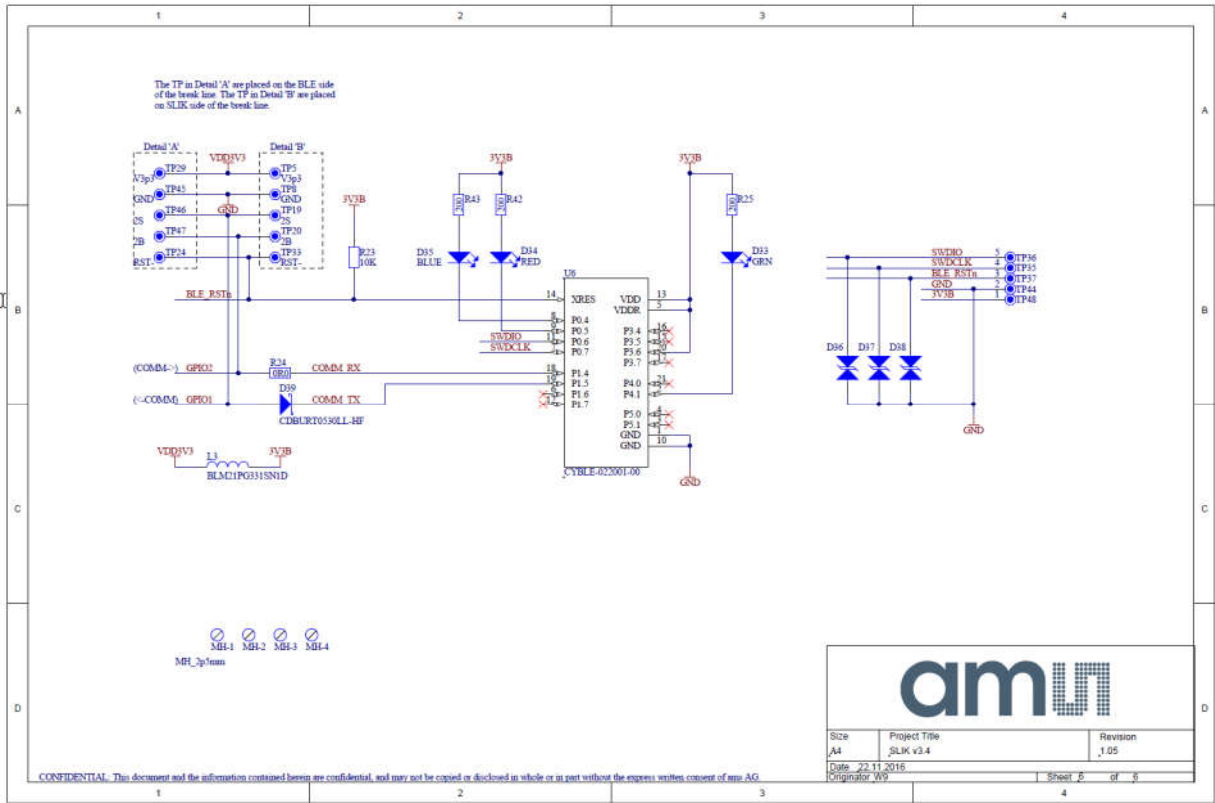
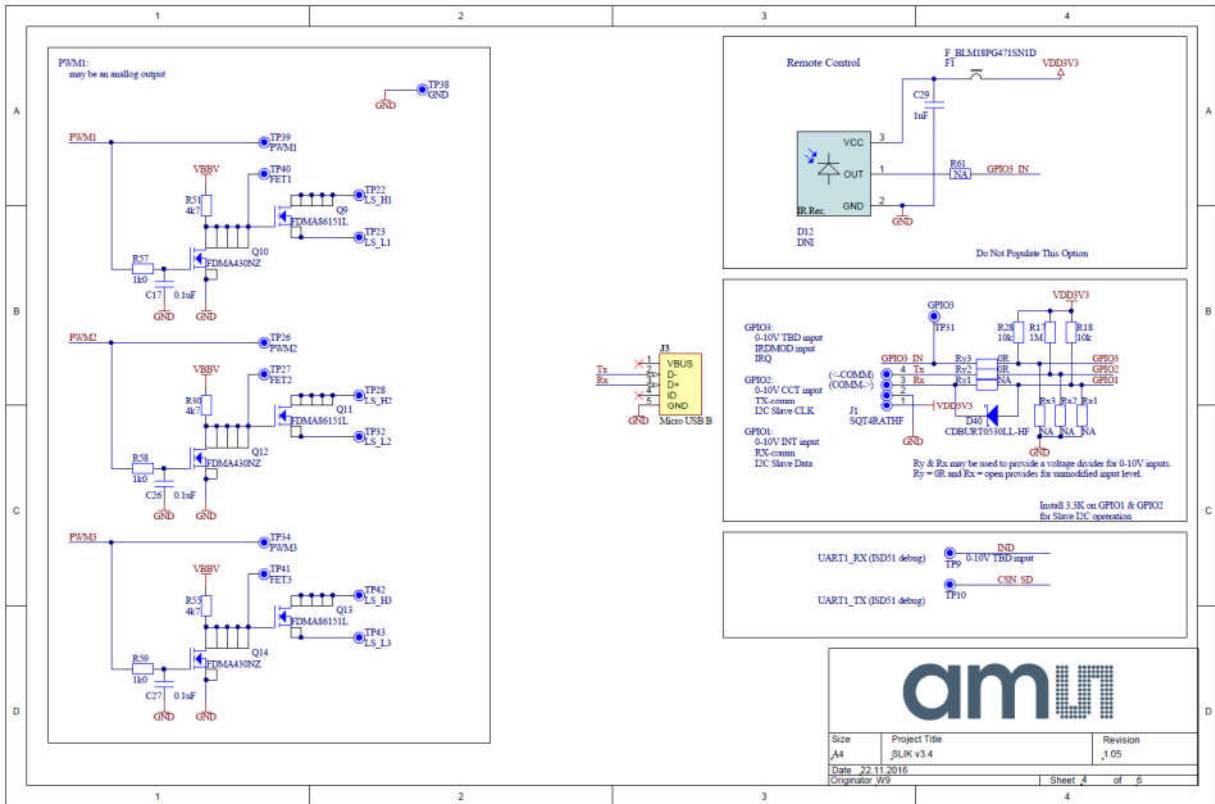
3 Schematic Details for the AS7221 Smart Lighting Mgr w/BLE Assembly

Below is the schematic for the AS7221 Smart Lighting Mgr w/BLE Assembly.

1. Sheet 1 includes the AS7221 device as well as 3.3V generation from the external AC/DC LED Driver's 12V supply. The AS7221's I²C interface for external slave devices such as the ams TSL4531 is also shown.
2. Sheet 2 shows typical MOSFETs for interfacing AS7221 PWMs to high voltage LED environments.
3. Sheet 3 shows the single chip BLE/Bluetooth solution.

Figure 4: AS7221 Smart Lighting Mgr w/BLE Assembly Schematic 3.4





4 Ordering & Contact Information

Ordering Code	Description
	AS7221 Smart Lighting Integration Kit (does not include the Luminaire itself)

For further information and requests, e-mail us at:

ams_sales@ams.com

For sales offices, distributors and representatives, please visit:

www.ams.com/contact

Headquarters

ams AG
Tobelbader Strasse 30
8141 Premstaetten
Austria, Europe

Tel: +43 (0) 3136 500 0

Website: www.ams.com

5 Copyrights & Disclaimer

Copyright ams AG, Tobelbader Strasse 30, 8141 Premstaetten, Austria-Europe. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Information in this document is believed to be accurate and reliable. However, ams AG does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Applications that are described herein are for illustrative purposes only. ams AG makes no representation or warranty that such applications will be appropriate for the specified use without further testing or modification. ams AG takes no responsibility for the design, operation and testing of the applications and end-products as well as assistance with the applications or end-product designs when using ams AG products. ams AG is not liable for the suitability and fit of ams AG products in applications and end-products planned.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data or applications described herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

ams AG reserves the right to change information in this document at any time and without notice.

6 Revision Information

- Version v1-02...initial document
- Version v1-03...updated to include the AS7221 supported ams TLS4531 external LUX sensor for Daylighting
- Version v1-04...updated Figure 1 for SLIK v3.2 schematic connections