

## UL-LL

# HYPER SPECTRAL

LED ILLUMINATION SYSTEM

Metaphase has another machine vision first, Hyperspectral broad band LED illumination! Finally break away from the typical hyperspectral Halogen light source with its high temperature and high-power consumption. Metaphase Hyperspectral VNIR 428-915nm or Broadband SWIR illumination (1050-1650nm) provide the ideal match to your favorite Hyperspectral camera. Don't need the full spectrum? Metaphase can tailor the light sources to match the camera's spectral response and specific application requirements.



Utilizing a full rod focal lens, the UL-LL provides a tight structured beam of light up to 12 inches (30.48 cm). The optimal working distance is 5 inches (12.7 cm). For working distances beyond 12 inches (30.48 cm), please see our Collimated Line Light offerings. High uniformity ( $\pm 5\%$ ) makes the UL Line Light ideal for front and back lighting line scan applications.

### FEATURES

- Built-in Constant Current Driver with 0-10VDC Intensity Control
- Passive cooling (no fans needed)
- Compliance: ETL listed (UL compliant), CE and RoHS.
- Compatible with DDC-3 and ILD-35 Dimmers

### APPLICATIONS

- Color chemical analysis
- Sorting
- Geometry measurements of long targets
- Direct position measurement
- Tube or bottle inspection
- Food and Pharmaceutical Inspections

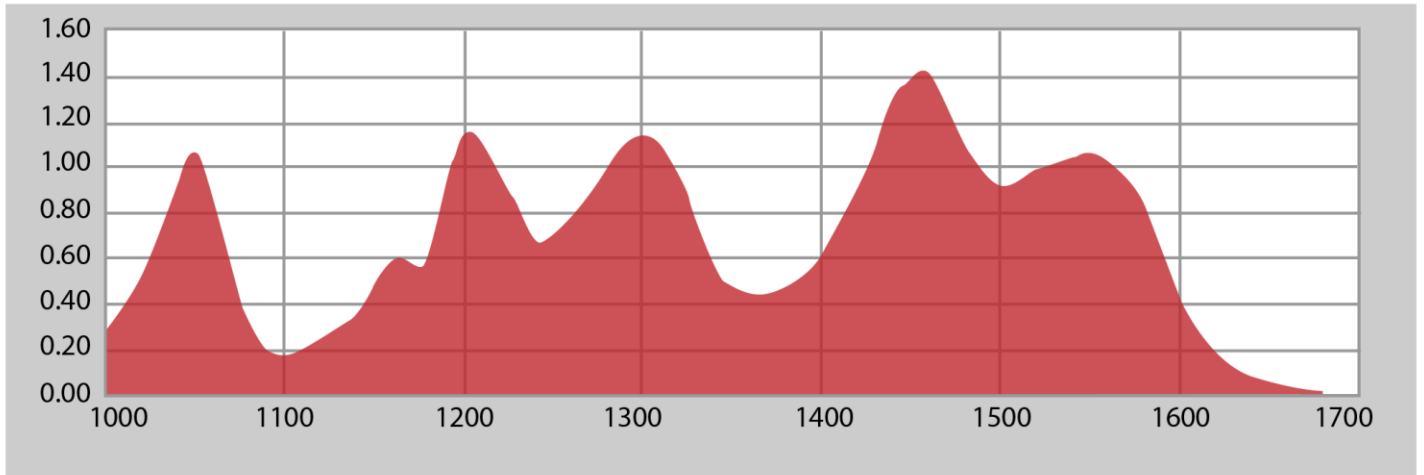
### GENERAL SPECIFICATIONS

|                             |                                 |
|-----------------------------|---------------------------------|
| <b>Power Source:</b>        | 24VDC $\pm 5\%$                 |
| <b>Cable (Standard):</b>    | 10-foot cable with flying leads |
| <b>Housing:</b>             | Black Anodized Aluminum         |
| <b>Ambient Temp:</b>        | -20°C to 40°C                   |
| <b>Lifetime Expectancy:</b> | 50,000 hours                    |

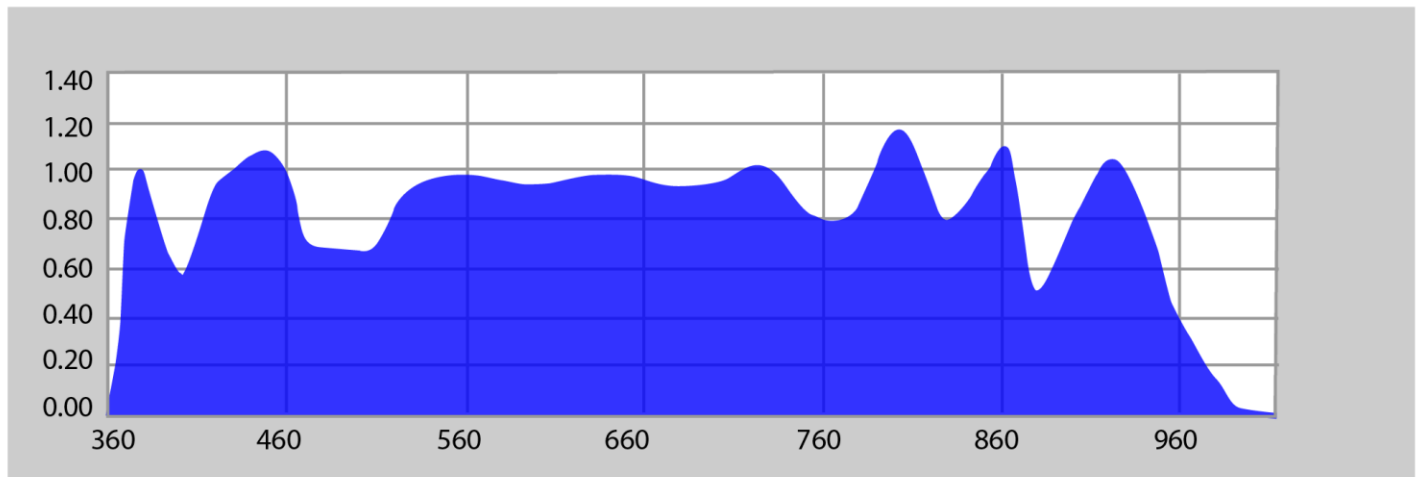
UL-LL



Broadband SWIR



Visible-NIR\*



UL-LL

| HYPER SPECTRAL LINE LIGHTS |                               |                            |                  |          |      |       |                                 |      |
|----------------------------|-------------------------------|----------------------------|------------------|----------|------|-------|---------------------------------|------|
|                            |                               |                            |                  | Cable(s) |      |       | Estimated Current (Amps) @24VDC |      |
| MODEL                      | Overall Length<br>Inches / cm | Lens Length<br>Inches / cm | Weight<br>lbs/Kg | Qty      | Lth  | Desc. | VNIR                            | SWIR |
| UL-LL209                   | 7.0 / 17.8                    | 6.25 / 15.9                | 3.2 / 1.45       | 1        | 10ft | CAT5  | .80                             | .80  |
| UL-LL309                   | 12.0 / 30.5                   | 11.25 / 28.6               | 5.4 / 2.45       |          |      |       | 1.5                             | 1.5  |
| UL-LL409                   | 17.0 / 43.2                   | 16.25 / 41.3               | 7.7 / 3.49       |          |      |       | 2.3                             | 2.3  |
| UL-LL509                   | 22.0 / 55.9                   | 21.25 / 54.0               | 10.0 / 4.54      |          |      |       | 3.0                             | 3.0  |
| UL-LL609                   | 27.0 / 68.6                   | 26.25 / 66.7               | 12.2 / 5.53      |          |      |       | 3.8                             | 3.8  |
| UL-LL709                   | 32.0 / 81.3                   | 31.25 / 79.4               | 14.5 / 6.58      |          |      |       | 4.5                             | 4.5  |
| UL-LL809                   | 37.0 / 94.0                   | 36.25 / 92.1               | 16.7 / 7.57      |          |      |       | 5.3                             | 5.3  |
| UL-LL909                   | 42.0 / 106.7                  | 41.25 / 104.8              | 18.9 / 8.57      |          |      |       | 6.0                             | 6.0  |
| UL-LL1009                  | 47.0 / 119.4                  | 46.25 / 117.5              | 21.2 / 9.62      |          |      |       | 6.8                             | 6.8  |
| UL-LL1109                  | 52.0 / 132.1                  | 51.25 / 130.2              | 23.5 / 10.6      |          |      |       | 7.5                             | 7.5  |
| UL-LL1209                  | 57.0 / 144.8                  | 56.25 / 142.9              | 25.5 / 11.6      |          |      |       | 8.3                             | 8.3  |
| UL-LL1309                  | 62.0 / 157.5                  | 61.25 / 155.6              | 28.3 / 12.8      |          |      |       | 9.0                             | 9.0  |
| UL-LL1409                  | 67.0 / 170.2                  | 66.25 / 168.3              | 30.4 / 13.8      |          |      |       | 9.8                             | 9.8  |
| UL-LL1509                  | 72.0 / 182.9                  | 71.25 / 181.0              | 35.5 / 16.1      |          |      |       | 2                               | 20ft |
| UL-LL1609                  | 77.0 / 195.6                  | 76.25 / 193.7              | 37.7 / 17.1      | 11.3     | 11.3 |       |                                 |      |
| UL-LL1709                  | 82.0 / 208.3                  | 81.25 / 206.4              | 40.0 / 18.1      | 12.0     | 12.0 |       |                                 |      |
| UL-LL1809                  | 87.0 / 221.0                  | 86.25 / 219.1              | 42.3 / 19.2      | 12.8     | 12.8 |       |                                 |      |
| UL-LL1909                  | 92.0 / 233.7                  | 91.25 / 231.8              | 44.5 / 20.2      | 13.5     | 13.5 |       |                                 |      |
| UL-LL2009                  | 97.0 / 246.4                  | 96.25 / 244.5              | 47.0 / 21.3      | 14.3     | 14.3 |       |                                 |      |
| UL-LL2109                  | 102 / 259.1                   | 101.25 / 257.2             | 49.0 / 22.2      | 15.0     | 15.0 |       |                                 |      |
| UL-LL2209                  | 107 / 271.8                   | 106.25 / 269.9             | 51.2 / 23.2      | 15.8     | 15.8 |       |                                 |      |
| UL-LL2309                  | 112 / 284.5                   | 111.25 / 282.6             | 53.4 / 24.2      | 16.5     | 16.5 |       |                                 |      |
| UL-LL2409                  | 117 / 297.2                   | 116.25 / 295.3             | 55.6 / 25.2      | 17.3     | 17.3 |       |                                 |      |
| UL-LL2509                  | 122 / 309.9                   | 121.25 / 308.0             | 58.0 / 26.3      | 18.0     | 18.0 |       |                                 |      |

UL-LL

| CABLE #1, CAT5      |                  |                                    |                      |  |
|---------------------|------------------|------------------------------------|----------------------|--|
| Wire Color          | Wire Type        | Function                           | Notes                |  |
| Red                 | 16 AWG, Stranded | 24VDC                              | CAT5<br>Belden 7949A |  |
| White               | 16 AWG, Stranded | 24VDC                              |                      |  |
| Black               | 16 AWG, Stranded | Ground (24V RTN)                   |                      |  |
| Green               | 16 AWG, Stranded | Ground (24V RTN)                   |                      |  |
|                     |                  |                                    |                      |  |
| Brown               | 24 AWG, Solid    | Signal #1, 0-10V Intensity Control |                      |  |
| Orange              | 24 AWG, Solid    | Signal #2, 0-10V Intensity Control |                      |  |
| Blue                | 24 AWG, Solid    | Signal #3, 0-10V Intensity Control |                      |  |
| Green               | 24 AWG, Solid    | Signal #4, 0-10V Intensity Control |                      |  |
| Brown/White stripe  | 24 AWG, Solid    | Signal #5, 0-10V Intensity Control |                      |  |
| Orange/White stripe | 24 AWG, Solid    | No Connection                      |                      |  |
| Blue/White stripe   | 24 AWG, Solid    | No Connection                      |                      |  |
| Green/White stripe  | 24 AWG, Solid    | No Connection                      |                      |  |

Note: The 0-10VDC Intensity Control input can accept voltages from 0-24VDC where the light will operate at full intensity in the 10-24VDC range. The light is proportionally dimmer for any Intensity Control voltage less than 10VDC and the light is OFF at approximately 0V or not connected (floating).

| CABLE #2, Power (if applicable) |                  |                       |
|---------------------------------|------------------|-----------------------|
| Wire Color                      | Function         | Notes                 |
| Red                             | 24VDC            | 16AWG<br>6 conductors |
| Brown                           | 24VDC            |                       |
| Orange                          | 24VDC            |                       |
| Black                           | Ground (24V RTN) |                       |
| Blue                            | Ground (24V RTN) |                       |
| Yellow                          | Ground (24V RTN) |                       |

UL-LL

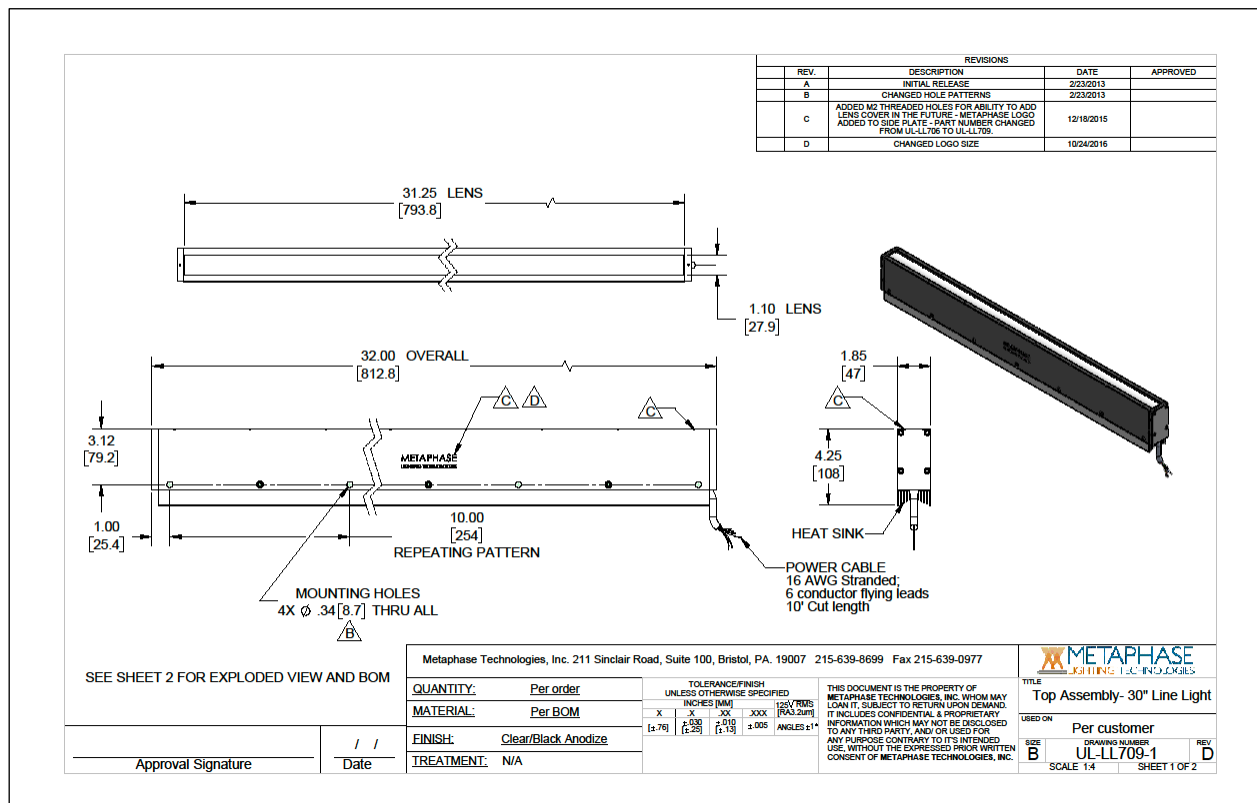
| PART NUMBER KEY   |                    |   |                                |   |                                    |   |   |   |           |   |   |
|---|--------------------|---|--------------------------------|---|------------------------------------|---|---|---|-----------|---|---|
| MODEL   | LENGTH ID (inches) | - | WAVELENGTH                     | - | DRIVER* (most common)              | - | POLARIZER   | - | COVER     | - | CABLE LENGTH  |
| UL-LL   | XXXX               | - | XXXX.X                         | - | XXX                                | - | XXXX  | - | XX        | - | XXX   |
| <b>UL-LL</b>  | <b>209 to 2509</b> |   | <b>VNIR.1</b><br><b>VNIR.2</b> |   | <b>24Z</b><br><b>U<sup>1</sup></b> |   | <b>POLO</b><br><br>Must use CC with Polarizer<br><br>Select or leave blank for no polarizer |   | <b>CC</b> |   | <b>5M</b><br><b>10M</b><br><br>Length can be customized:<br>ex.7M=7meters<br><br>Select or leave blank for 3 meters |
| Example 1: <b>UL-LL409-C428C650-24Z</b>                 |                    |   |                                |   | (preliminary)                      |   | <sup>1</sup> Not available in lights exceeding 4A input current                             |   |           |   |   |
| Example 2: <b>UL-LL1709-C428C650IR810IR850IR915-24Z</b> |                    |   |                                |   | (preliminary)                      |   |   |   |           |   |   |

**When ordering the Backlight version diffuser, add a B designator before LL. Example: UL-BLL409-C428C650-24Z**

Contact Metaphase Technologies or your local representative for options such as custom diffusers, lenses, polarizers, IP-rated enclosures for harsh environments, higher intensity, custom wavelengths, higher uniformity, etc. Not all options are available for all lights.

### UL-LL

Sample Part Number: **UL-LL709-C428C650-24Z**



### COMPLIANCE

### CONTACT US



Contact Metaphase Technologies at **215-639-8699** or your local representative for additional details, options and customizations.