

# Nomenclature

## UNIVERSAL PRECISE™

### ABBREVIATIONS

|               |                                                               |
|---------------|---------------------------------------------------------------|
| <b>CWA</b>    | Constant Wattage Autotransformer                              |
| <b>CWI</b>    | Constant Wattage Isolated                                     |
| <b>ISO</b>    | Regulated Lag                                                 |
| <b>R-HPF</b>  | Reactor—High Power Factor                                     |
| <b>R-NPF</b>  | Reactor—Normal Power Factor                                   |
| <b>HX-HPF</b> | Lag Type — High Reactance Autotransformer—High Power Factor   |
| <b>HX-NPF</b> | Lag Type — High Reactance Autotransformer—Normal Power Factor |

### UL Bench Top Rise Temperature Code

To facilitate UL inspection, the UL Bench Top Rise Temperature Code is shown on the Universal Core & Coil Ballast label as 1029X. 1029 is the UL Standard for HID Ballasts, and the X is the temperature code. If a fixture is UL listed for 1029D, then automatically all ballasts with an A, B, C or D temperature classification are acceptable for use within that same fixture.

### UL Bench Top Rise Letter Code Temperature Range for Class H (180° C) Ballasts

|               |               |                |
|---------------|---------------|----------------|
| A < 75°C      | B 75°C < 80°C | C 80°C < 85°C  |
| D 85°C < 90°C | E 90°C < 95°C | F 95°C < 100°C |

|                        |         |                                                          |                               |                        |                           |                             |                           |                             |
|------------------------|---------|----------------------------------------------------------|-------------------------------|------------------------|---------------------------|-----------------------------|---------------------------|-----------------------------|
| ← Field →              |         |                                                          |                               |                        |                           |                             |                           |                             |
| 1                      | 2       | 3                                                        | 4                             | 5                      | 6                         | 7                           | 8                         | 9                           |
| ← Number of Digits →   |         |                                                          |                               |                        |                           |                             |                           |                             |
| 1                      | 2 to 4  | 3                                                        | 1                             | 1                      | 1                         | 1                           | 3                         | 1                           |
| M                      | 2 0 0 0 | M L T                                                    | A                             | C                      | 5                         | M                           | 0 0 0                     | C                           |
| Lamp Type<br>(M/P/S/H) | Wattage | Primary Voltage<br>(MLT/ML5/TRI/<br>48T/120/277/<br>230) | Circuit Type<br>(R/A/I/O/L/M) | Style<br>(C/F/W/E/I/P) | Frame Size<br>(E/3/4/5/X) | Model<br>Modification Field | Pack Code<br>(000 TO 999) | Container Type<br>(C/T/I/K) |

| Field | Description                                                                                    |
|-------|------------------------------------------------------------------------------------------------|
| 1     | (M) Metal Halide, (P) Pulse Start Metal Halide, (S) High Pressure Sodium                       |
| 2     | 35 to 1500 Watts (Varies from two to four digits)                                              |
| 3     | (MLT) Quad, (ML5) Multi-5, (TRI) TriVolt, (48T) 480/120, (120) 120, (277) 277, (230) 230V/50Hz |
| 4     | (R) Reactor, (A) CWA, (I) CWI, (O) IsoReg, (L) High Reactance/Lag, (M) MagLag                  |
| 5     | (C), C&C, (F) F-Can, (W) Weatherproof, (E) Encased/Potted C&C (I) Indoor Encased               |
| 6     | (E) E&I, (3) 3x4, (4) 4-3/4, (5) 5-3/4, (X) Non Core and Coil                                  |
| 7     | Model Modification Field                                                                       |
| 8     | Pack Code (000 to 999, per pack code listing)                                                  |
| 9     | (C) Carton, (T) Tray, (I) Individual, (K) Kit                                                  |

# HID CORE & COIL BALLASTS

## PULSE START METAL HALIDE

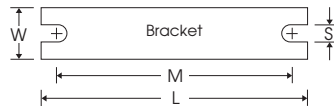
- 60 Hz
- Minimum starting temperature: -30° C

| Input<br>Volts                                                | Catalog<br>Number | Circuit<br>Type | Watts<br>Input | Max<br>Input<br>Current      | Nom<br>Open<br>Circuit<br>Voltage | Fuse<br>Rating   | Wir<br>Dia | Dimensions |      |      | Capacitor |             |                 |      |                    |      | Total<br>Weight<br>(lbs.) | Ignitor           |                                 |                         |
|---------------------------------------------------------------|-------------------|-----------------|----------------|------------------------------|-----------------------------------|------------------|------------|------------|------|------|-----------|-------------|-----------------|------|--------------------|------|---------------------------|-------------------|---------------------------------|-------------------------|
|                                                               |                   |                 |                |                              |                                   |                  |            | Ref<br>Dwg | A    | B    | µF        | Min<br>Volt | Dry Film<br>Dia | Ht   | Oil Filled<br>Oval | Ht   |                           | Catalog<br>Number | Max<br>Distance<br>to lamp (ft) | UL<br>Bench<br>Top Rise |
| (1) 35/39 WATT M130 METAL HALIDE LAMP                         |                   |                 |                |                              |                                   |                  |            |            |      |      |           |             |                 |      |                    |      |                           |                   |                                 |                         |
| 120 or<br>277 or<br>347                                       | M35TRILC3M        | HX-HPF          | 54             | .84<br>.40<br>.30            | 235                               | 2<br>1           | 9          | PC1        | 0.85 | 2.15 | 5         | 300         | 1.26            | 2.36 | 1.31x2.16          | 2.2  | 1.7                       | MH100-3A          | 5                               | A                       |
| 120 or<br>208 or<br>240 or<br>277                             | M35MLTLC3M        | HX-HPF          | 50             | .82<br>.48<br>.42<br>.36     | 230                               | 2<br>1<br>1      | 10         | PC1        | 0.85 | 2.0  | 5         | 277         | 1.26            | 2.83 | 1.31x2.16          | 2.2  | 1.7                       | MH100-3A          | 5                               | A                       |
| (1) 50 WATT M110 METAL HALIDE LAMP — Medium Base              |                   |                 |                |                              |                                   |                  |            |            |      |      |           |             |                 |      |                    |      |                           |                   |                                 |                         |
| 120 or<br>277 or<br>347                                       | M50TRILC3M*       | HX-HPF          | 65             | 1.25<br>0.55<br>0.45         | 250                               | 3<br>2<br>2      | 9          | PC1        | 1.05 | 2.40 | 6         | 280         | 1.26            | 2.83 | 1.31x2.16          | 2.2  | 4.25                      | MH100-3A          | 10                              | A                       |
| 120 or<br>208 or<br>240 or<br>277                             | M50MLTLC3M*       | HX-HPF          | 65             | 1.25<br>0.70<br>0.60<br>0.55 | 255                               | 3<br>3<br>2<br>2 | 10         | PC1        | 1.05 | 2.40 | 6         | 280         | 1.26            | 2.83 | 1.31x2.16          | 2.2  | 3.6                       | MH100-3A          | 10                              | A                       |
| (1) 70 WATT M98 / M143 (C98) METAL HALIDE LAMP - Medium Base  |                   |                 |                |                              |                                   |                  |            |            |      |      |           |             |                 |      |                    |      |                           |                   |                                 |                         |
| 120 or<br>277 or<br>347                                       | M70TRILC3E*       | HX-HPF          | 89             | 1.75<br>0.75<br>0.60         | 260                               | 5<br>2<br>2      | 9          | PC1        | 1.5  | 2.65 | 8         | 280         | 1.65            | 2.83 | 1.31x2.16          | 2.2  | 5.0                       | MH100-3A          | 10                              | A<br>A<br>A             |
| 120 or<br>277 or<br>347                                       | M70TRILC3M        | HX-HPF          | 91             | 1.85<br>0.80<br>0.65         | 260                               | 4<br>2<br>2      | 9          | PC1        | 1.5  | 2.65 | 8         | 280         | 1.65            | 2.83 | 1.31x2.16          | 2.2  | 5.0                       | MH100-3A          | 10                              | A                       |
| 120 or<br>208 or<br>240 or<br>277                             | M70MLTLC3E*       | HX-HPF          | 89             | 1.70<br>1.00<br>0.85<br>0.75 | 255                               | 4<br>3<br>2<br>2 | 10         | PC1        | 1.30 | 2.65 | 8         | 280         | 1.65            | 2.83 | 1.31x2.16          | 2.2  | 4.5                       | MH100-3A          | 10                              | A<br>A<br>A<br>B        |
| 120 or<br>208 or<br>240 or<br>277                             | M70MLTLC3M        | HX-HPF          | 90             | 1.70<br>1.00<br>0.85<br>0.75 | 255                               | 4<br>3<br>2<br>2 | 10         | PC1        | 1.30 | 2.65 | 8         | 280         | 1.65            | 2.83 | 1.31x2.16          | 2.2  | 4.5                       | MH100-3A          | 10                              | A                       |
| 480                                                           | M7048TLC3E*       | HX-HPF          | 91             | 0.45                         | 260                               | 1                | 8          | PC1        | 1.35 | 2.80 | 8         | 300         | 1.65            | 2.83 | 1.31x2.16          | 2.2  | 4.2                       | MH100-3A          | 10                              | C                       |
| 480                                                           | M7048TLC3M        | HX-HPF          | 95             | 0.45                         | 260                               | 1                | 8          | PC1        | 1.35 | 2.80 | 8         | 300         | 1.65            | 2.83 | 1.31x2.16          | 2.2  | 4.2                       | MH100-3A          | 10                              | E                       |
| (1) 70 WATT M85 METAL HALIDE LAMP - Double Ended              |                   |                 |                |                              |                                   |                  |            |            |      |      |           |             |                 |      |                    |      |                           |                   |                                 |                         |
| 120 or<br>208 or<br>240 or<br>277                             | M70MLTLC3D        | HX-HPF          | 90             | 1.70<br>1.00<br>0.85<br>0.75 | 255                               | 4<br>3<br>2<br>2 | 10         | PC1        | 1.30 | 2.65 | 8         | 280         | 1.65            | 2.83 | 1.31x2.16          | 4.5  | 4.25                      | MH70-3B           | 10                              | A                       |
| (1) 100 WATT M90 / M92 / M140 METAL HALIDE LAMP - Medium Base |                   |                 |                |                              |                                   |                  |            |            |      |      |           |             |                 |      |                    |      |                           |                   |                                 |                         |
| 120 or<br>277 or<br>347                                       | M100TRILC3E*      | HX-HPF          | 124            | 2.60<br>1.15<br>0.90         | 265                               | 7<br>3<br>3      | 9          | PC1        | 1.6  | 2.95 | 12        | 280         | 1.65            | 2.83 | 1.31x2.16          | 3.13 | 5.5                       | MH100-3A          | 10                              | A<br>A<br>A             |
| 120 or<br>277 or<br>347                                       | M100TRILC3M       | HX-HPF          | 129            | 2.60<br>1.15<br>0.90         | 265                               | 7<br>3<br>3      | 9          | PC1        | 1.6  | 2.95 | 12        | 280         | 1.65            | 2.83 | 1.31x2.16          | 3.13 | 5.5                       | MH100-3A          | 10                              | A                       |
| 120 or<br>208 or<br>240 or<br>277                             | M100MLTLC3E*      | HX-HPF          | 124            | 2.60<br>1.55<br>1.30<br>1.15 | 260                               | 8<br>5<br>4<br>4 | 10         | PC1        | 1.5  | 2.8  | 12        | 280         | 1.65            | 2.83 | 1.31x2.16          | n/a  | 4.5                       | MH100-3A          | 10                              | C<br>C<br>B<br>B        |
| 120 or<br>208 or<br>240 or<br>277                             | M100MLTLC30       | HX-HPF          | 127            | 2.60<br>1.55<br>1.30         | 260                               | 8<br>5<br>4      | 10         | PC1        | 1.5  | 2.8  | 12        | 280         | 1.65            | 2.83 | 1.31x2.16          | n/a  | 4.5                       | MH100-3A          | 10                              | C<br>C<br>B             |
| 480                                                           | M10048TLC3M*      | HX-HPF          | 127            | 1.15<br>0.60                 | 285                               | 4<br>2           | 8          | PC1        | 1.7  | 3.0  | 10        | 300         | 1.65            | 2.83 | 1.31x2.16          | 2.7  | 5.5                       | MH100-3A          | 10                              | B<br>C                  |

\* Meets DOE requirements for metal halide lighting fixtures and CSA C863-16 efficiency requirements for metal halide ballasts

**See page 4-26 for Reference  
Drawings and Wiring Diagrams.**

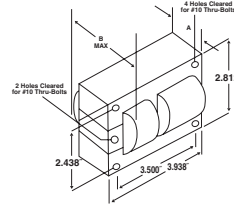
| Description of popular ballast modifications (Fields 8 and 9 see p. 4-10) |                                                                                                                                                                          |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 000                                                                       | Core & Coil ballast only (no bracket, no capacitor)                                                                                                                      |
| 200                                                                       | Core & Coil ballast with welded bracket and without capacitor                                                                                                            |
| 500                                                                       | Core & Coil ballast with standard capacitor, no bracket                                                                                                                  |
| 500K                                                                      | Core & Coil ballast distributor replacement kit with capacitor and adjustable mounting brackets                                                                          |
| 502K                                                                      | Core & Coil ballast distributor replacement kit with capacitor and adjustable mounting brackets plus capacitor boot. Available for tri-volt products for Canadian market |
| 518                                                                       | Core & Coil ballast with dry capacitor, no bracket                                                                                                                       |
| 700                                                                       | Core & Coil ballast with standard capacitor, and welded bracket                                                                                                          |
| 718                                                                       | Core & Coil ballast with dry capacitor, and welded bracket                                                                                                               |



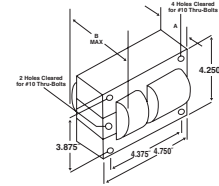
| Ref. Dwg. | L     | W     | M     | S     |
|-----------|-------|-------|-------|-------|
| PC1       | 5.25" | 1.25" | 4.60" | 0.25" |
| PC2       | 7.75" | 1.25" | 5.75" | 0.25" |
| PC3       | 7.75" | 2.75" | 6.10" | 0.25" |
| 2         | 4.00" | 0.75" | 3.35" | 0.25" |

See p. 4-6 for adjustable mounting brackets and detailed bracket drawings.

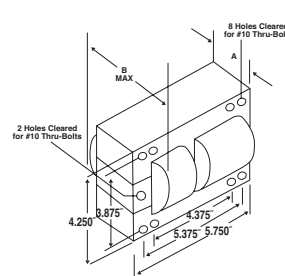
REFERENCE DRAWING PC1



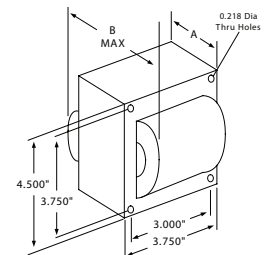
REFERENCE DRAWING PC2



REFERENCE DRAWING PC3

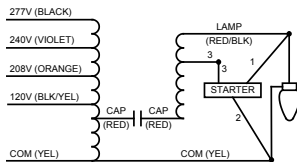


REFERENCE DRAWING 2

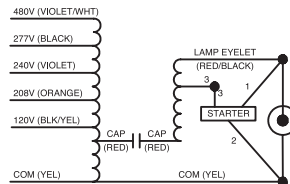


## WIRING DIAGRAMS

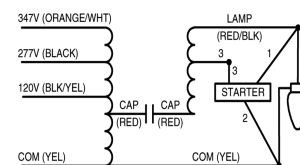
Wiring Diagram 1



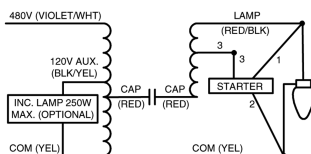
Wiring Diagram 2



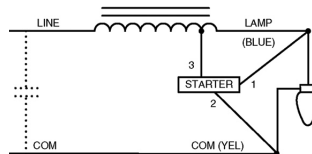
Wiring Diagram 3



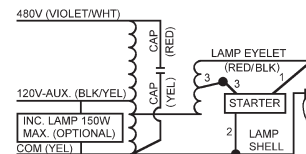
Wiring Diagram 4



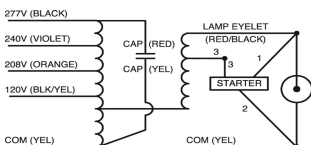
Wiring Diagram 7



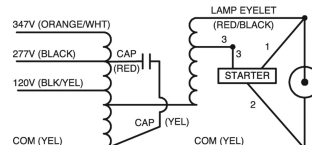
Wiring Diagram 8



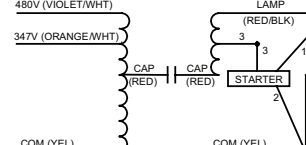
Wiring Diagram 10



Wiring Diagram 9



Wiring Diagram 23



**Note:** Nominal dimensions provided above  
Contact Universal for drawings and/or tolerances