



Understanding T5 Electronic Programmed Start Ballasts

UltraStart® T5 programmed start ballasts for T5 fluorescent lamps.

GE has developed a line of T5 ballasts that incorporate the benefits of programmed start ballasts with the energy savings, fast starting and parallel lamp operation of instant start ballasts. GE's UltraStart® T5 ballasts use low energy loss, high efficiency components along with continuous cathode cutout (CCC) technology—resulting in 8 fewer watts than standard 4-lamp 54 watt T5 ballasts. GE's UltraStart® T5 ballasts offer a 44% improvement over standard T5 ballasts and a new industry threshold for high efficiency ballasts.

The GE UltraStart® Watt-Miser® T5 Lamp and Ballast System Advantage

- 18 watts lower than standard 4-lamp, 54 watt T5 systems with the same light output
- Operates lamps in parallel (which means if one lamp fails, the other lamps remain on)
 - significantly reduces lamp maintenance costs
- Fast starting programmed start ballast < 700 milliseconds compared to standard T5 at > 1.1 to 1.5 seconds

GE UltraStart® T5 programmed start ballasts use a control circuit to apply very precise cathode heat to ensure lamp cathodes have reached optimum temperature during lamp starting. Precise starting reduces the amount of cathode degradation associated with each start and increases lamp life significantly. After starting the lamps, continuous cathode cutout technology (CCC) is applied—which eliminates wasted power to the lamps, resulting in high efficiencies. GE UltraStart® systems also have the advantage of operating lamps in parallel. Parallel (versus series) lamp operation ballasts typically reduce spot relamping costs by 50% or extend group relamping by 15% or more due to average lamp mortality early failures.

T5 Lamps

GE T5 lamps can be electrically characterized into two groups:

High Efficiency (HE) Lamps (F14T5, F21T5, F28T5, F35T5 – standard, high-lumen and Watt-Miser®)

These lamps are high efficiency (HE), delivering around 100 lumens per watt and, while operating at the same lamp arc current, can be operated on the same ballast if the ballast system power and starting voltage are appropriate for the lamp load.

High Output (HO) Lamps (F24T5, F39T5, F54T5, F49T5, F80T5 – standard and Watt-Miser®)

These lamps are driven for high light output and are slightly less efficient (LPW) than HE lamps. They have unique lamp arc currents and starting voltages by wattage that require a specific ballast for each HO lamp wattage.



T5 High Output – Programmed Start

T5 Electronic Programmed Start For T5 HO Lamps*

94131 – GE454MVPS90-E-S (replaces 73192)

T5 High Output - UltraStart® Programmed Start

4/2 – F54T5HO 120 to 277 UltraStart® PRS High Temp E Can

- High Efficiency T5 ballast with Continuous Cathode Cutout Technology
- Lower Maintenance Costs with Parallel Lamp Operation
- Multi-Voltage technology means a single ballast handles voltage from 108V to 305V
- Auto-Restart withstands temporary losses in power without the need to cycle power
- UltraCool® Operation 90°C case rating
- Anti-Striation Control for better light quality, with no striations.
- Individual lamp End of Lamp Life protection - only one lamp shuts down at end of life.
- Cold temperature -20F Minimum Starting Temperature
- The ballast should have the step dimming features and be able to provide 50% input power (+/-15%) in the dimming mode by shutdown 2 of the 4 lamps.

| General characteristics | |
|-------------------------------|---|
| Ballast Type | Electronic - Program / Rapid Start |
| Starting Method | Programmed start |
| Lamp Wiring | Parallel |
| Line Voltage Regulation (+/-) | 10% |
| Ambient Temperature (MAX) | 55°C (131°F) |
| Case Temperature (MAX) | 90°C (194°F) |
| Ballast Factor | Normal |
| Power Factor Correction | Active |
| Sound Rating | A (20-24 decibels) |
| Enclosure Type | Metal |
| Additional Info | Auto-restart, End of Life Protection (EOL), Thermally protected |


| Electrical characteristics | |
|----------------------------|------------|
| Supply Current Frequency | 50Hz/60 Hz |

| Order information | | | |
|-------------------|-------------|----------|---------|
| 10 Pack | Pallet Pack | DIY Pack | IP Pack |
| 94131 | | | |

| Dimensions | |
|---|-------------------|
| Wiring diagram – LFL 4c – see example on page 13-17 | |
| Case dimensions – Ref Drawing – G Can – see page 13-19 | |
| Length (L) | 16.7 in (424 mm) |
| Width (W) | 1.7 in (41 mm) |
| Height (H) | 1.2 in (30.5 mm) |
| Mounting dimensions | |
| Mount Length (M) | 16.1 in (410 mm) |
| Weight | 2.73 lbs |
| Exit Type | Side |
| Remote Mounting Distance to Lamp | 12 ft |
| Remote Mounting Wire Gauge | 18 AWG |
| Lead lengths | |
| Length (± 1 in.) | |
| Black/White | 25.0 in (635 mm) |
| Blue | 34.0 in (864 mm) |
| Blue/White | 34.0 in (864 mm) |
| Gray | 25.0 in (635 mm) |
| Orange | 47.0 in (1195 mm) |
| Red | 34.0 in (864 mm) |
| Red/White | 34.0 in (864 mm) |
| Yellow | 47.0 in (1195 mm) |

| Specifications by lamp and wattage | | | | | | | | | | |
|------------------------------------|------------|------------|--------------|-------------------|-----------------------|-------------------------|--------------------|-------------------|-----------|----------------------------|
| Lamp | # of Lamps | Line Volts | System Watts | Nom. Line Current | System Ballast Factor | Ballast Efficacy Factor | Power Factor% (>=) | Crest Factor (<=) | THD% (<=) | Min. Starting Temp (°F/°C) |
| F54T5/HO | 4 | 277 | 222 | 0.84 A | 1.00 | 0.45 | 99 | 1.7 | 4 | -20/-29 |
| | 3 | 277 | 171 | 0.66 A | 1.01 | 0.59 | 99 | 1.7 | 5 | -20/-29 |
| | 2 | 277 | 114 | 0.44 A | 1.00 | 0.87 | 98 | 1.7 | 8 | -20/-29 |
| | 4 | 120 | 227 | 2.02 A | 0.99 | 0.44 | 99 | 1.7 | 6 | -20/-29 |
| | 3 | 120 | 174 | 1.59 A | 0.99 | 0.57 | 99 | 1.7 | 7 | -20/-29 |
| | 2 | 120 | 114 | 1.02 A | 1.00 | 0.87 | 99 | 1.7 | 8 | -20/-29 |
| | 4 | 277 | 204 | 0.76 A | 1.00 | 0.49 | 99 | 1.7 | 4 | -20/-29 |
| | 3 | 277 | 160 | 0.61 A | 1.00 | 0.62 | 99 | 1.7 | 6 | -20/-29 |
| | 2 | 277 | 105 | 0.39 A | 1.00 | 0.95 | 98 | 1.7 | 7 | -20/-29 |
| | 4 | 120 | 208 | 1.83 A | 1.00 | 0.48 | 99 | 1.7 | 4 | -20/-29 |
| | 3 | 120 | 162 | 1.44 A | 1.00 | 0.62 | 99 | 1.7 | 7 | -20/-29 |
| | 2 | 120 | 105 | 0.92 A | 1.00 | 0.95 | 99 | 1.7 | 9 | -20/-29 |
| F54T5/47W | 4 | 277 | 210 | 0.76 A | 1.03 | 0.49 | 99 | 1.7 | 4 | -20/-29 |
| | 3 | 277 | 164 | 0.61 A | 1.03 | 0.63 | 99 | 1.7 | 5 | -20/-29 |
| | 2 | 277 | 109 | 0.39 A | 1.03 | 0.95 | 98 | 1.7 | 7 | -20/-29 |
| | 4 | 120 | 215 | 1.83 A | 1.04 | 0.48 | 99 | 1.7 | 6 | -20/-29 |
| | 3 | 120 | 166 | 1.44 A | 1.04 | 0.63 | 99 | 1.7 | 7 | -20/-29 |
| | 2 | 120 | 109 | 0.92 A | 1.05 | 0.97 | 99 | 1.7 | 9 | -20/-29 |
| | 4 | 277 | 211 | 0.78 A | 1.01 | 0.48 | 99 | 1.7 | 4 | -20/-29 |
| | 3 | 277 | 165 | 0.63 A | 1.02 | 0.62 | 99 | 1.7 | 5 | -20/-29 |
| | 2 | 277 | 109 | 0.41 A | 1.04 | 0.95 | 98 | 1.7 | 7 | -20/-29 |
| | 4 | 120 | 216 | 1.89 A | 1.04 | 0.48 | 99 | 1.7 | 6 | -20/-29 |
| | 3 | 120 | 168 | 1.49 A | 1.03 | 0.61 | 99 | 1.7 | 7 | -20/-29 |
| | 2 | 120 | 109 | 0.96 A | 1.03 | 0.94 | 99 | 1.7 | 9 | -20/-29 |
| F54T5/WM | 4 | 277 | 208 | 0.77 A | | 0.00 | 99 | 1.7 | 4 | -20/-29 |
| | 3 | 277 | 161 | 0.61 A | | 0.00 | 99 | 1.7 | 6 | -20/-29 |
| | 2 | 277 | 107 | 0.40 A | | 0.00 | 98 | 1.7 | 8 | -20/-29 |
| | 4 | 120 | 213 | 1.85 A | | 0.00 | 99 | 1.7 | 6 | -20/-29 |
| | 3 | 120 | 164 | 1.44 A | | 0.00 | 99 | 1.7 | 7 | -20/-29 |
| | 2 | 120 | 107 | 0.94 A | | 0.00 | 99 | 1.7 | 9 | -20/-29 |
| | 4 | 277 | 210 | 0.77 A | 0.92 | 0.44 | 99 | 1.7 | 4 | 0/-18 |
| | 3 | 277 | 162 | 0.62 A | 0.91 | 0.56 | 99 | 1.7 | 5 | 0/-18 |
| | 2 | 277 | 109 | 0.40 A | 0.92 | 0.85 | 98 | 1.7 | 7 | 0/-18 |
| | 4 | 120 | 215 | 1.87 A | 0.91 | 0.42 | 99 | 1.7 | 6 | 0/-18 |
| | 3 | 120 | 165 | 1.47 A | 0.91 | 0.55 | 99 | 1.7 | 7 | 0/-18 |
| | 2 | 120 | 109 | 0.93 A | 0.93 | 0.85 | 99 | 1.7 | 9 | 0/-18 |
| FT55W/2G11 | 4 | 277 | 219 | 0.83 A | 0.90 | 0.41 | 99 | 1.7 | 4 | 0/-18 |
| | 3 | 277 | 170 | 0.66 A | 0.90 | 0.53 | 99 | 1.7 | 5 | 0/-18 |
| | 2 | 277 | 112 | 0.43 A | 0.90 | 0.80 | 98 | 1.7 | 8 | 0/-18 |
| | 4 | 120 | 224 | 2.01 A | 0.89 | 0.40 | 99 | 1.7 | 6 | 0/-18 |
| | 3 | 120 | 172 | 1.57 A | 0.89 | 0.52 | 99 | 1.7 | 7 | 0/-18 |
| | 2 | 120 | 112 | 1.00 A | 0.90 | 0.80 | 99 | 1.7 | 9 | 0/-18 |

Safety and performance

Product is compliant with material restriction requirements of RoHS  UL Type 1 Outdoor  UL Type HL FCC – CLASS A Non-Consumer ANSI-C62.41-1991

ANSI-C82.11-Cons 2002  UL Class P  UL Type CC  UL Listed  cUL Listed No PCB's For one lamp operation, safety only DOE 2014 ballast rule - 10 CFR Part 430

High Temperature Rated: Suitable for high temperature applications 70C max case temp 5 yr warranty or 90C max case temp 3 yr warranty