Full Featured Hot Runner Temperature Control . . .

. . . competitively priced to fit your budget

The Gammaflux LEC temperature controller provides field-proven hot runner controller performance, reliability, and affordability. No longer do you have to pay top dollar to get top hot runner temperature control.

Control for Up To 24 Zones

Designed for smaller hot runner system applications, the LEC is offered with 2, 6 and 12 zone enclosures. A network module allows you to link two 6 or 12 zone enclosures together for up to 24 zones of control. The LEC features a modular design for simple control card removal, addition or replacement.

Extensive Diagnostics

Each 6 and 12 zone LEC enclosure comes prewired, ready to accept an optional network module. With a network module, users can connect the LEC to a laptop or PC to take advantage of advanced features including; security settings, remote input, and unique Gammaflux software including GammaVision (SPC data/graphing analysis), Mold Doctor (advanced mold troubleshooting), and Field Calibrator. The network module also enables a link to plant monitoring systems.

Triangulated Control Technology™

All Gammaflux hot runner temperature controllers feature Triangulated Control Technology™. Using this unique technology, our controllers:

1) Sense – 20 times per second, Gammaflux controllers precisely measure the thermocouple;

2) Control – the proprietary self-optimizing Gammaflux PID³ control algorithm adjusts if the actual temperature deviates 0.1°F (0.05°C) from setpoint. The second derivative (PID’) monitors the actual temperature rate of change. As a result, the LEC module regulates the output to the heater in advance of achieving setpoint to limit or eliminate over or undershoot.

3) Actuate – using phase angle fired output, the Gammaflux controller delivers smooth and exact power to each heater in 0.24 VAC increments for the ultimate in temperature control.

Triangulating your process with a Gammaflux controller means achieving better temperature control, that could result in:

- enhanced part quality
- reduced scrap
- improved part weight consistency
- material savings
- higher profit margins

Power Priority™

"Low mass", or extremely small hot runner nozzles are a unique challenge to control. To smooth the power and ultimately the melt heat history, Gammaflux has created Power Priority™. Power Priority™ smoothes the power output to individual zones. Users have the option to manually apply a Power Priority™ set point from 1 (light) to 4 (heavy) output, providing unparalleled control for applications where it is most needed.

Protection

Closed loop wet heater bakeout - 120 times per second (at 60 Hz), the LEC module checks the heater for a short, steadily ramping up the voltage for the fastest possible time to set point. If the heater is wet or shorted, the output is adjusted within 8.3 milliseconds to protect the heater, cables and controller.

5 YEAR WARRANTY

Every LEC controller comes with a full 5-year warranty and is backed by the industry-leading worldwide service and support that our customers expect from Gammaflux.
Advanced Module Settings

(0) Power Priority™
(1) * Reset advanced setup to default values
(2) Temperature deviation alarm set point
(3) Control algorithm setting/adjustment
(4) Algorithm set point (view only)
(5) Standby set point
(6) Thermocouple pinched detection time
(7) * Critical over temperature alarm
(8) * Automatic set point limit
(9) * Manual set point limit
(10) * Boost limit
(11) * Initial boost set point
(12) * Boost time set point
(13) * Degree F or C selection
(14) * Type J or K thermocouple selection
(15) * Zone power status on power up
  ' (16) * Enable slaved power-up
  ' (17) * Security code level 1
  ' (18) * Security code level 2
(19) Output module controller software version/revision
(20) Temperature controller software version/revision
(21) LED test
' (22) Security level indicated/change

Network Module Features

- Manages information for 1 or 2 enclosures
- Slaved Power Up – evenly heats all zones to setpoint
- Security Levels – Supervisor, Operator and Lockout
- Remote Input – Programmable Inhibit or Standby
- Alarm Output – when any alarm is active
- * Gammavision – SPC data/graphing
- * Mold Doctor – Advanced troubleshooting
- * Field Calibrator – Thermocouple offsets
- Link to plant monitoring system or machine

* Laptop/PC required

Set individually by zone

* Network module distribution or value applies to both zones on the module

Network module required

- Standby switch on enclosure (6 and 12 zone enclosures only)
- All zones go to standby mode
Since 1966 GAMMAFLUX has been the premier manufacturer of temperature control systems for hot runner injection molders. In addition to producing the most advanced temperature control and tool fault detection systems in the marketplace, our technology is available in a variety of temperature controllers that can accommodate any budget.

### LEC Specifications

**Performance**
- Thermocouple Calibration Accuracy: 0.2°F (±0.1°C)
- Control Accuracy (steady state): ±0.1°F (±0.05°C)
- Heater Short Detection Time: 8.3 msec. or 120 times per second at 60 Hz
- PID® Algorithm Execution Time: 50 msec. or 20 times per second
- Tuning: Automatic, self optimizing, manual override
- Manual Mode: Power compensation for incoming voltage variation
- Degree F or C: Field selectable
- Operating Range: 0 - 932°F (0 - 500°C)
- Output Range: 0 - 240 VAC, Phase angle fixed, 1000 steps
- Standby Temperature: User selectable, 0 - 932°F (0 - 500°C)
- Remote Input (Network Module required): 24 or 120 VAC/VDC
  - Programmable inhibit or standby

**Input Specifications**
- Thermocouple: Type J standard, Type K selectable
- Cold Junction Compensation: Internal to enclosure
- External Resistance: 10 Meg. Ohms
- Temp. Variation due to T/C Length: None

**Electrical**
- Input Voltage: 180 - 265 VAC Delta/Wye
- Frequency: 47 - 53 Hz, 57 - 63 Hz
- Ambient Temperature Range: 32 - 115°F (0 - 45°C)
- Humidity Range: 10 - 95% non-condensing
- Output Module Rating: 240 VAC; 2 zone = 15 amps/zone 3600 watts/zone
- Communications Electrical Standard: RS-232 standard, RS-485 selectable

**Connections**
- Standard enclosure (2 zone): HBE16 dual latch (combination power and thermocouple)
- Standard enclosure (6 and 12 zone): (2) HBE24 dual latch (one power, one thermocouple)
- Standard tool end of cable: H44 (2 zone only), HBE10, HBE16, HBE24, DME® (PIC/MTC5, 8 & 12), HBE48, or flying leads
- Thermocouple cables: Stranded (stack mold or high stress applications)
- Custom enclosure: Contact Gammaflux with your requirements
- Custom tool end of cable: Contact Gammaflux with your requirements

**Additional Customization**
- Input power cable: 12 ft. (3.6m) standard, 15, 20 and 30 ft. (4.5, 6.1, and 9.1m) lengths available
- Length of mold power and T/C cable: 15 ft. standard (4.5m) and 30 ft. (9.1m) lengths available
- Circuit breaker: Select the circuit breaker to meet your requirements

**Performance Standards**
- U.S., Canadian and International: CE Mark; I.E.C. 801-1, 801-2, 801-3, 801-4
  * Safety UL-508, UL-873 and CSA

<table>
<thead>
<tr>
<th><strong>Physical Specifications</strong></th>
<th><strong>Height</strong> (inches/millimeters)</th>
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<th><strong>Depth</strong> (inches/millimeters)</th>
<th><strong>Weight</strong> (pounds/kilograms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Zone Enclosure</td>
<td>9/229</td>
<td>6/152</td>
<td>16/406</td>
<td>20/9</td>
</tr>
<tr>
<td>6 Zone Enclosure</td>
<td>9/229</td>
<td>13/330</td>
<td>16/406</td>
<td>28/13</td>
</tr>
<tr>
<td>12 Zone Enclosure</td>
<td>9/229</td>
<td>19/483</td>
<td>16/406</td>
<td>43/20</td>
</tr>
<tr>
<td>24 Zone Stacked Enclosure</td>
<td>18/457</td>
<td>19/483</td>
<td>16/406</td>
<td>86/36</td>
</tr>
</tbody>
</table>

*Weight includes maximum amount of output modules, excludes cables
  Specifications subject to change without notice
  DME® is a registered trademark of D-M-E Company

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**User’s Card**

Step by step user’s card eases system operation and is available in a variety of languages.