DME CONTROL SYSTEMS
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Online Price Guide

Go to www.dme.net/prices for the latest pricing guide.
Smart Series® TSP™
Temperature Control System Series

POWERFUL, FLEXIBLE
AND AFFORDABLE
The TSP™ Temperature Control System optimizes injection molding performance of any hot runner system with the advanced features of a touch screen unit but within a minimal footprint.

**Benefits**

**TSP USER-FRIENDLY PERFORMANCE**
- Intuitive, leading edge touch screen display with adjustable viewing angle
- Automatically employed diagnostics to ensure optimal hardware configuration and performance
- Advanced micro controller technology
- Continuous ground fault and current measurement

**PLUG-AND-PLAY SYSTEM ARCHITECTURE**
- Patented “all-in-one” control card designed for reliability
- Modular 6-zone cards; 15 amps per zone
- Field calibration mode
- Universal power supply

**OPTIMIZES PERFORMANCE FOR ALL HOT RUNNER SYSTEMS**
- Unique low voltage soft-start feature maximizes heater life
- Uniform startup feature reduces scrap and energy usage
- Proprietary adaptive auto-tuning control algorithm
- Phase angle or burst firing modes (time proportional, zero-crossing)

**ROBUST, HIGH-QUALITY DESIGN**
- Compact solid metal enclosure with heavy-duty industrial connectors
- Mold and controller protection features
- On-board heater and thermocouple fuses
- Portable stand available

**OPTIONAL 7" DISPLAY WITH ADVANCED FEATURE SET NOW AVAILABLE!**

**IMPORTANT NOTICE:** TSP Controllers are not designed to control all zones as manifold zones. Doing so will cause the main circuit breaker to trip.
## Specifications

**TSP™ Temperature Control System Specifications**

<table>
<thead>
<tr>
<th>User Interface</th>
<th>Full-color LCD touch screen on all HMI models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Size</td>
<td>5.7” QVGA</td>
</tr>
<tr>
<td>Calibration Accuracy</td>
<td>0.5°C / 1°F</td>
</tr>
<tr>
<td>Control Accuracy</td>
<td>+/- 0.5°C / 1°F</td>
</tr>
<tr>
<td>Power Response Time</td>
<td>8.3 ms at 60 Hz</td>
</tr>
<tr>
<td>Control Algorithm</td>
<td>Adaptive PID² with auto-tuning</td>
</tr>
<tr>
<td>Degree (F or C)</td>
<td>Software selectable</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>J- or K-Type, software selectable</td>
</tr>
<tr>
<td>Operating Range</td>
<td>0 - 472°C or 32 - 882°F</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>Maximum 264 VAC</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>200/240 Delta or 380/440V 3Ø Star</td>
</tr>
<tr>
<td>Supply Breaker</td>
<td>40A 3-phase breaker for 6- and 12-zone control units</td>
</tr>
<tr>
<td></td>
<td>63A 3-phase breaker for 18- to 48-zone control units</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 - 60 Hz automatic switching</td>
</tr>
<tr>
<td>Ambient Temperature Range</td>
<td>5 - 45°C (41 - 113°F)</td>
</tr>
<tr>
<td>Humidity Range</td>
<td>Up to 95% non-condensing</td>
</tr>
<tr>
<td>Ground Fault Detection</td>
<td>40mA per zone</td>
</tr>
<tr>
<td>Power Control</td>
<td>Phase angle or burst firing modes (time proportional, zero-crossing)</td>
</tr>
<tr>
<td>Overload Protection</td>
<td>Semi-conductor fuses on both heater legs</td>
</tr>
<tr>
<td>Control Modes</td>
<td>Closed loop (auto), open loop (manual), standby, boost mode and slave mode</td>
</tr>
<tr>
<td>Alarm Output</td>
<td>Closing contact relay, max. 5A, 230V</td>
</tr>
<tr>
<td>T/C and Power Connector</td>
<td>HAN 24e or 3</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>Fault, Scan</td>
</tr>
<tr>
<td>Soft-Start with Auto-Tune</td>
<td>Unique low voltage method for heater safety</td>
</tr>
<tr>
<td>Input Protection</td>
<td>Plug-in nano fuses on both TC legs</td>
</tr>
<tr>
<td>Port (optional)</td>
<td>USB</td>
</tr>
</tbody>
</table>

### Item Number Table

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Slots</th>
<th># of Zones</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITS-06-15</td>
<td>1</td>
<td>6</td>
<td>Special order; contact DME</td>
</tr>
<tr>
<td>ITS-12-15</td>
<td>2</td>
<td>12</td>
<td>In stock</td>
</tr>
<tr>
<td>ITS-18-15</td>
<td>3</td>
<td>18</td>
<td>Special order; contact DME</td>
</tr>
<tr>
<td>ITS-24-15</td>
<td>4</td>
<td>24</td>
<td>In stock</td>
</tr>
<tr>
<td>ITS-30-15</td>
<td>5</td>
<td>30</td>
<td>Special order; contact DME</td>
</tr>
<tr>
<td>ITS-36-15</td>
<td>6</td>
<td>36</td>
<td>Special order; contact DME</td>
</tr>
<tr>
<td>ITS-42-15</td>
<td>7</td>
<td>42</td>
<td>Special order; contact DME</td>
</tr>
<tr>
<td>ITS-48-15</td>
<td>8</td>
<td>48</td>
<td>In stock</td>
</tr>
</tbody>
</table>
**TSP Component Ordering Information**

### Mold Power Cables (15 AMP Max)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FROM 15 AMP FRAME (S)</th>
<th>TO POWER INPUT CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 FOOT LONG</td>
<td>20 FOOT LONG</td>
<td>30 FOOT LONG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPC12C10G</td>
<td>MPC12C20G</td>
<td>MPC12C30G</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Thermocouple Cables (for 15 or 30 AMP Mainframes)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FROM 15 AMP FRAME (S)</th>
<th>TO THERMOCOUPLE CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 FOOT LONG</td>
<td>20 FOOT LONG</td>
<td>30 FOOT LONG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TC12C10G</td>
<td>TC12C20G</td>
<td>TC12C30G</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ZONES

<table>
<thead>
<tr>
<th>ZONES</th>
<th>CONTROLLER</th>
<th>CABLES</th>
<th>TERMINAL MOUNTING BOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 ZONES OF CONTROL (15 AMP)</td>
<td>ITS-12-15</td>
<td>MPC12C10G (1 each)</td>
<td>PTC12TBTS (1 each)</td>
</tr>
<tr>
<td>24 ZONES OF CONTROL (15 AMP)</td>
<td>ITS-24-15</td>
<td>MPC12C10G (2 each)</td>
<td>PTC12TBTS (2 each)</td>
</tr>
<tr>
<td>48 ZONES OF CONTROL (15 AMP)</td>
<td>ITS-48-15</td>
<td>MPC12C10G (4 each)</td>
<td>PTC12TBTS (4 each)</td>
</tr>
</tbody>
</table>

### Module Replacement Fuses

(sold in packs of 5)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
<th>AMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM0123</td>
<td>POWER FUSE</td>
<td>15</td>
</tr>
<tr>
<td>RPM0124</td>
<td>TC FUSE</td>
<td>.062</td>
</tr>
</tbody>
</table>

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TSP Plus Temperature Control System

Everything you loved about the original TSP controller with new enhanced features for optimal control.

- **Automatic Leak detection**
- Enhanced 7” Color Touch screen
- Storage: up to 100 Tools
- Full IO function card with 4 input + 4 output for communication
- Optional Thermocouple to monitor steel temperature and alarm if cooling is off
- Accuracy 0.01 °F
- Ability to control Small Mass / High Watt density nozzles
- Field selectable PID (parameters) to optimize control process
- APS technology (Adaptive Process System)
- SPI communication Protocol via RS232/RS485 included

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>SLOTS</th>
<th># OF ZONES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITSP-12-15</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>ITSP-24-15</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>ITSP-48-15</td>
<td>8</td>
<td>48</td>
</tr>
</tbody>
</table>

Custom zone configurations available upon request

**SMART SERIES USER-FRIENDLY PERFORMANCE**
- Intuitive, leading edge touch screen display with adjustable viewing angle
- Automatically employed diagnostics to ensure optimal hardware configuration and performance
- Advanced micro controller technology
- Continuous ground fault and current measurement

**PLUG-AND-PLAY SYSTEM ARCHITECTURE**
- Patented “all-in-one” control card designed for reliability
- Modular 6-zone cards; 15 amps per zone
- Field calibration mode
- Universal power supply

**IMPORTANT NOTICE:** Smart Series Controllers are not designed to control all zones as manifold zones. Doing so will cause the main circuit breaker to trip.

**OPTIMIZES PERFORMANCE FOR ALL HOT RUNNER SYSTEMS**
- Unique low voltage soft-start feature maximizes heater life
- Uniform startup feature reduces scrap and energy usage
- Proprietary adaptive auto-tuning control algorithm
- Phase angle or burst firing modes (time proportional, zero-crossing)

**ROBUST, HIGH-QUALITY DESIGN**
- Compact solid metal enclosure with heavy-duty industrial connectors
- Mold and controller protection features
- On-board heater and thermocouple fuses
- Portable stand available
### Mold Power Cables (15 AMP Max)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM</th>
<th>ITEM</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FROM 15 AMP FRAME (S)</th>
<th>TO POWER INPUT CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPC12C10G</td>
<td>MPC12C20G</td>
<td>MPC12C30G</td>
<td>12</td>
<td>12 ZONE</td>
<td>PIC12G</td>
</tr>
</tbody>
</table>

### Thermocouple Cables (for 15 or 30 AMP Mainframes)

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM</th>
<th>ITEM</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FROM 15 AMP FRAME (S)</th>
<th>TO THERMOCOUPLE CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC12C10G</td>
<td>TC12C20G</td>
<td>TC12C30G</td>
<td>12</td>
<td>12 ZONE</td>
<td>MTC12G</td>
</tr>
</tbody>
</table>

### ZONES

<table>
<thead>
<tr>
<th>ZONES</th>
<th>CONTROLLER</th>
<th>CABLES</th>
<th>TERMINAL MOUNTING BOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 ZONES OF CONTROL</td>
<td>ITSP-12-15</td>
<td>MPC12C10G</td>
<td>PTC12TBTS</td>
</tr>
<tr>
<td>(15 AMP)</td>
<td>(1 each)</td>
<td>(1 each)</td>
<td>(1 each)</td>
</tr>
<tr>
<td>24 ZONES OF CONTROL</td>
<td>ITSP-24-15</td>
<td>MPC12C10G</td>
<td>PTC12TBTS</td>
</tr>
<tr>
<td>(15 AMP)</td>
<td>(2 each)</td>
<td>(2 each)</td>
<td>(2 each)</td>
</tr>
<tr>
<td>48 ZONES OF CONTROL</td>
<td>ITSP-48-15</td>
<td>MPC12C10G</td>
<td>PTC12TBTS</td>
</tr>
<tr>
<td>(15 AMP)</td>
<td>(4 each)</td>
<td>(4 each)</td>
<td>(4 each)</td>
</tr>
</tbody>
</table>

### Module Replacement Fuses

( sold in packs of 5)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
<th>AMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM0123</td>
<td>POWER FUSE</td>
<td>15</td>
</tr>
<tr>
<td>RPM0124</td>
<td>TC FUSE</td>
<td>.062</td>
</tr>
</tbody>
</table>
ROHS/WEEE-COMPLIANT TEMPERATURE CONTROLS FOR HOT RUNNER SYSTEMS
Capability/RoHS and WEEE Compliant

DME offers 2-, 5-, 8-, and 12-zone standard mainframes for 15A operation and 1-, 2-, 3-, and 5-zone standard mainframes for 30A operation. Components listed in this catalog satisfy all international compliances. This includes RoHS (Restriction of Hazardous Substances) that prohibits or restricts the use of six potentially harmful materials in electronic equipment, and WEEE (Waste Electrical and Electronic Equipment) that requires equipment made after August 2005 to be taken back and recycled by the manufacturer, rather than just “thrown away.”

Two-Year Warranty

All DME temperature controllers are now covered by a two-year warranty, excluding fuses and triacs.

Electrical Noise Immunity

To enhance immunity from electrical noise, power and thermocouple wire are harnessed in separate wire ways within the body of the frame. Additional noise immunity is provided through the use of shielded thermocouple wires.

The DME Smart Series® is the result of intensive and dedicated research with a goal of designing today’s most versatile and reliable line of temperature controllers. DME achieved this goal by not only incorporating the latest technology, but by also making certain that each controller is easy to install and above all... easy to operate.

Heavy Duty Welded Construction

With years of experience behind its design, the Smart Series line is built to last under the most rigorous conditions. The mainframe’s welded 16 gauge steel construction ensures long life and peak performance. Cooling fans in the frame are strategically located to increase air ventilation, maintain cooler running conditions, and promote control module reliability.
Control Modules

SSM (15 and 30 AMP): The SSM module provides accurate temperature control, including Smart Start® heater dry out circuitry, thermocouple fault displays and auto/manual modes of operation. The SSM features automatic or manual bumpless transfer which, in the event of a thermocouple fault, provides switch over to manual mode at the proper power setting to continue molding until the fault can be corrected. This module can also trigger remote standby heat (idle), boost, off, and alarm functions when used with the TAS module.

DSS (15 and 30 AMP): For those who require independent dual displays for process and setpoint temperatures, the DSS is the ideal choice. The DSS module also features automatic or manual bumpless transfer. This module is also fully compatible with the TAS module for standby heat and alarm functions.

Accessory Modules

TAS: The TAS module provides over/under visual and audible alarms, boost, and standby heat control with control modules as stated above. The TAS module can accommodate up to 63 zones of control. Alarm is activated at ± 30° F. See pages 143-144 for details.

NOTE: The TAS accessory module requires the use of “MFC” style communications mainframes. Non-communications frames may be upgraded on-site with installable kits.

Simplified Power Hook-Up

Concern for user convenience didn’t stop with improved operation features. DME went one step beyond to ensure that the power hook-up procedure goes smoothly as well. For this reason, detailed schematics for various hook-ups are provided directly on all mainframe back panels. If it is ever necessary to change the configuration, these diagrams will help ensure safe and proper connections. All wiring diagrams can be referenced at the end of this section.

SSH Controller (10 AMP)

The SSH is a stand-alone single zone controller ideal for use with hot sprue bushings or machine nozzles.
# Smart Series® Temperature Control Systems

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<td>DSS Temperature Control Modules .............................................</td>
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<td>Terminal Box Detail &amp; Mold Connectors – European ......................</td>
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</tr>
<tr>
<td>Cable Storage Basket ........................................................................</td>
<td>155</td>
</tr>
</tbody>
</table>
### Typical System Configurations

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Components</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSM1512 DSS1512</td>
<td>5 Zones of Control (15 AMP)</td>
<td>MFP5G + MPC5C10G + PTC5TBTS</td>
<td>X5</td>
</tr>
<tr>
<td>SSM1512 DSS1512</td>
<td>8 Zones of Control (15 AMP)</td>
<td>MFP8G + MPC8C10G + PTC8TBTS</td>
<td>X8</td>
</tr>
<tr>
<td>SSM1512 DSS1512</td>
<td>12 Zones of Control (15 AMP)</td>
<td>MFP12G + MPC12C10G + PTC12TBTS</td>
<td>X12</td>
</tr>
<tr>
<td>SSM3012 DSS3012</td>
<td>2 or 3 Zones of High Power Control (30 AMP)</td>
<td>MFHP2G + MPCH23C10G + MTC5G + PICH23G</td>
<td>X2 or 3X</td>
</tr>
<tr>
<td>SSM3012 DSS3012</td>
<td>5 Zones of High Power Control (30 AMP)</td>
<td>MFHP5G + MPCH5C10G + MTC5G + PICH5G</td>
<td>X5</td>
</tr>
</tbody>
</table>

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SSH1022/21 (10 AMP)

- Compact
- Easy-to-use
- Includes new, improved and unique features
- Provides microprocessor-based PID control
- More accurate than analog or variac controllers
- Built-in thermocouple diagnostics
- Ideal for use with a hot sprue bushing or a machine nozzle

Key Features

- **Large Digital Display**
  - For easier readability of temperature, % power and faults
- **Setpoint Pushwheel**
  - For setting desired setpoint temperature
  - Allows adjustment of setpoint before turning power on
- **AUTO % Power Display**
  - Shows % power output while in AUTO mode
  - Indicates average % power requirement on thermocouple failure
  - A diagnostic tool for solving problems

Switchable Options

- **Shorted Thermocouple Sensitivity Adjustment**
  - Operation can be tailored to fast or slow reaction times
  - Sensitivity can be adjusted with internal switches
  - Very useful for zones with long startup times
- **Switchable °C/°F Operation**
  - Scale indicated at startup
- **K Type Thermocouple Support**
- **Cut Feature**
  - Gain cut feature for small nozzles and heaters with ungrounded internal thermocouples

Operational Refinements

- **Improved SmartStart®**
  - A more gradual temperature rise leads to a more effective heater dry out period, thereby extending heater life
  - SmartStart® now available as an option in manual mode
- **SelectiveCycle®**
  - A very high speed power output approach
  - Enables accurate temperature control and longer heater life
- **Bumpless Transfer**
  - When a thermocouple failure occurs, operation is automatically continued with a learned % power
  - Unique software accurately assigns percent power setting
- **Third Fuse**
  - Allows for display of low temperature alarm when the load fuses are blown

Front Panel Digital LED Indicators

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backward Thermocouple</td>
<td>SHO Shorted Thermocouple</td>
</tr>
<tr>
<td>Open Thermocouple</td>
<td>bPL Bumpless Transfer</td>
</tr>
<tr>
<td>Front Panel Lockout</td>
<td>Loc</td>
</tr>
<tr>
<td>Temp Mode Fahrenheit</td>
<td>DF</td>
</tr>
<tr>
<td>Temp Mode Centigrade</td>
<td>DC</td>
</tr>
<tr>
<td>Process Temp</td>
<td>SS0</td>
</tr>
<tr>
<td>Manual % Power</td>
<td>40</td>
</tr>
<tr>
<td>Lockout Error</td>
<td>Err</td>
</tr>
</tbody>
</table>
Smart Series®
RoHS/WEEE Compliant
Smart Series® Single Zone Temperature Controller

SSH1022/21 (10 AMP)
Controller includes 19-foot power cord, mating mold power and thermocouple connector (CKPTM1) and two spare fuses (ABC10). Additional cables and/or connectors must be ordered separately. See Page 121 for detailed information on cables and connectors.

Warranty: Two year (excluding triac and fuses).

Front Panel Controls and Indicators
1. Process Temperature Display:
   Shows process temperature, thermocouple faults and other operational modes. Displays % power when switch (3) is pressed down.
2. Temperature Deviation Lights:
   Indicates deviation from setpoint. Outer lights blink at more than ±40°F (22°C) from setpoint.
3. Auto / Manual / % Auto Power Switch:
   Selects AUTO or MANUAL control mode. Shows % power when pressed into “% AUTO” position.
4. LED Mode Indicators:
   Left LED illuminates during manual mode. Right LED illuminates when power is supplied to heater. Right LED blinks during SmartStart®.
5. Setpoint Pushwheel:
   Three digit switch programs setpoint in AUTO mode. Right two digits program % power in MANUAL mode.
6. Power On/Off Switch:
   Controls AC power to module.

Rear Panel
1. Mold Power and Thermocouple Output Connector:
   CKPTIC1 connects to the heater and thermocouple. Mating connector CKPTM1 is supplied with controller.
2. Power Input Cord:
   Nineteen foot cord supplies power to controller. Plug supplied with SSH1021 (120 VAC) units. No plug supplied with SSH1022.
3. Load Fuse Receptacles:
   Provides safe and easy replacement of load fuses.
Smart Series®
RoHS/WEEE Compliant
Smart Series® Single and 2-Zone Mainframes (10 AMP max.)

Single and Two-Zone 10 AMP Mainframes
The DME Portable 10 AMP Mainframes are designed for use with 10 or 15 AMP* Smart Series or G-Series Temperature Control Modules. Mainframe is supplied with power input and power-thermocouple output connectors. Circuit breaker provides safety for operation. Control modules and cables are to be ordered separately.

NOTE: Maximum safe operating amperage is 10 AMPS per zone when using 15 AMP modules. If application will draw more than 10 AMPS per zone, use 15 AMP Mainframe (MFPR2G).

*User must install ABC10 (10 AMP) fuses in the 15 AMP control modules to protect the mainframe.

Single and Two-Zone 10 AMP Mainframes
(50-60 Hz, single phase)

**Includes frame and connectors listed. Modules and cables ordered separately.

NOTE: Replacement power connectors in frame are also available on special order.

Recommended Mold Pocket Layout
(For Mold Power-Thermocouple Input Connector CKPTIC1)

** Includes frame and connectors listed. Modules and cables ordered separately.

NOTE: Replacement power connectors in frame are also available on special order.

Recommended Mold Pocket Layout
(For Mold Power-Thermocouple Input Connector CKPTIC1)

** Includes frame and connectors listed. Modules and cables ordered separately.

NOTE: Replacement power connectors in frame are also available on special order.

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(For Mold Power-Thermocouple Input Connector CKPTIC1)

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(For Mold Power-Thermocouple Input Connector CKPTIC1)

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Recommended Mold Pocket Layout
(For Mold Power-Thermocouple Input Connector CKPTIC1)

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NOTE: Replacement power connectors in frame are also available on special order.

Recommended Mold Pocket Layout
(For Mold Power-Thermocouple Input Connector CKPTIC1)

** Includes frame and connectors listed. Modules and cables ordered separately.

NOTE: Replacement power connectors in frame are also available on special order.

Recommended Mold Pocket Layout
(For Mold Power-Thermocouple Input Connector CKPTIC1)
For Use With MFP1G, MFP1G1, MFPR2G, SSH1022 and SSH1021

Mold Power-Thermocouple Input Connector
A Single-Zone Power-Thermocouple Input Connector is available for mounting in or on the mold to accept the power-thermocouple cable from the mainframe. Water resistant, the connector has an integral retaining latch for a secure cable connection and numbered screw-type terminals for power and thermocouple lead wires.
*Can be mounted on top of mold for use with hot sprue bushings.

Armored Mold Power-Thermocouple Cables
Single-Zone Mold Power-Thermocouple Cables are constructed of special lead wire for use in high temperature environments, and are available to connect the mainframe to the controller on the mold. Available in lengths of 10 or 20 feet. Integral retaining latches on the mainframe and mold connections provide secure cable connections. Connector configurations ensure proper insertion of cable.

Replacement Connector Kits (for Controller & Cables)

**MALE POWER – T/C CONNECTORS:**
- CKPTM1 is on MPTC10/20 Cables;
- Mates with Frame or CKPTF1L only
- CKPTM1L Mates With CKPTF1 only

**FEMALE POWER – T/C CONNECTORS:**
- CKPTF1 is on MPTC10/20 Cables;
- Mates with Mold or CKPTM1L only
- CKPTF1L Mates with CKPTM1 only

Terminal Mounting Boxes – Prewired (10 AMP) 5 Pin
Terminal Mounting Boxes provide the easiest and most economical method of mounting power and thermocouple connectors on the mold. Constructed of plated heavy gauge steel, each box is precut and drilled for quick mounting of the box to the mold (2-zone, prewired terminal mounting box with terminal strip shown with cover plate removed).
Smart Series® 2-Zone Mainframes (15 AMP) and Accessories

Two-Zone 15 AMP Mainframes

Provides 15 AMP (3600 watts) per zone. For use with Smart Series or G-Series modules. Supplied with built-in cooling fan, power input, power output and thermocouple input connectors. Control modules and cables are ordered separately.

**TWO-ZONE 15 AMP MAINFRAME (240 VAC, 50-60 Hz, SINGLE PHASE)**

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>WATTS PER ZONE</th>
<th>CONNECTORS SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFFPR2G</td>
<td>3500</td>
<td>(1) AC1240F (POWER IN)</td>
</tr>
</tbody>
</table>

Includes frame and connectors listed. Modules and cables ordered separately.

**NOTE:** Replacement parts in frame are also available by special order. See pages 146-147.

---

Frame Dimensions:

7”W x 9”H x 10”D
(9”H dimension does not include connectors or handle)

---

**Armored Mold Power – Thermocouple Cables (15 AMP)**

Single-Zone Mold Power-Thermocouple Cable is constructed of special lead wire for use in high temperature environments. This cable connects the mainframe to the connector on the mold. Available in lengths of 10 or 20 feet. Retaining latches on the mold connector provide secure cable connections.

**Terminal Mounting Boxes – Prewired (15 AMP)**

Terminal Mounting Boxes provide the easiest and most economical method of mounting power and thermocouple connectors on the mold. Constructed of plated heavy gauge steel, each box is precut and drilled for quick mounting of the box to the mold (2-zone, prewired terminal mounting box with terminal strip shown with cover plate removed).

**NOTE:** 6-pin connectors and pins are available as a special order only. These are crimp contacts. (See pages 148-149 for mounting dimensions.)
The DME Portable Single-Zone High Power Mainframe is designed for use with 30 AMP Smart Series or G-Series temperature control modules. Mainframe is supplied with built-in cooling fan, power input, power output, and thermocouple input connectors. Circuit breaker provides safety for the operator. Control modules and cable are ordered separately.

### Single Zone 30 AMP Mainframes (240 VAC, 50-60 Hz, Single Phase)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>WATTS (OUTPUT)</th>
<th>CONNECTORS SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFHP1G</td>
<td>7200</td>
<td>(1) AC1240F (POWER IN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) AC1240M (POWER OUT)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1) M2MJ (T/C IN)</td>
</tr>
</tbody>
</table>

### Replacement Connectors and Accessories

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPCH110</td>
<td>10 ft. mold power cable (240 VAC) (1 AC1240F twist-lock connector on mold end; 1 AC1240M twist-lock connector on frame end)</td>
</tr>
<tr>
<td>MPCH120</td>
<td>20 ft. mold power cable (240 VAC) (same connectors as MPCH110)</td>
</tr>
<tr>
<td>AC1240MI</td>
<td>1-Zone twist-lock mold power input connector (mounts in mold or terminal mounting box; accepts AC1240F twist-lock connector on MPCH110 or MPCH120 20 cable)</td>
</tr>
<tr>
<td>TC110</td>
<td>10 ft. thermocouple cable (1 M2MJ mini-plug each end)</td>
</tr>
<tr>
<td>TC120</td>
<td>20 ft. thermocouple cable (1 M2MJ mini-plug each end)</td>
</tr>
<tr>
<td>AC1240F*</td>
<td>240 VAC twist-lock power input connector (mates with frame power input)</td>
</tr>
<tr>
<td>AC1240M*</td>
<td>240 VAC twist-lock power output connector (mates with frame power output)</td>
</tr>
<tr>
<td>M2MJ*</td>
<td>thermocouple mini-plug (mates with frame or jack strip connector)</td>
</tr>
<tr>
<td>PTCH1TBG</td>
<td>terminal mounting box (mounts to mold; accepts 1 AC1240M and 1 TCS1)</td>
</tr>
<tr>
<td>TCS1</td>
<td>jack strip connector</td>
</tr>
</tbody>
</table>

*Included with MFHP1G mainframe

### FRAME DIMENSIONS:

7”W x 9”H x 10”D

(9”H dimension does not include connectors or handle)
**Smart Series® Mainframes (15 AMP)**

**Smart Series® Mainframe (15 AMP Max.) Configurations**

The 12 configurations illustrated below provide a wide selection of zone capacities to suit most control applications. The 5-, 8- and 12-zone frames (MFP5, 8, and 12G) use individual frame sections. The 16 thru 48 zone frames use 2, 3, or 4 frame sections rigidly fastened together into one prewired integral unit which requires only one main AC power input connection. The Current Voltage monitor option will be factory installed when ordered at the same time as Mainframe. Control modules, cables, mold connectors and other accessories are ordered separately (see table on next page).

- Each frame section (MFP5G, MFP8G, and MFP12G) has its own cooling fan.
- Multi-section frame heights are multiples of 9” height shown (e.g. MFP32G is 27” high).
- Main AC input shown will always be in bottom frame section. For higher power requirements, individual power inputs and circuit breakers can be factory installed in each section of a stack frame on a special order basis.

### WORLDWIDE WIRING CAPABILITIES

Unless otherwise specified, all Smart Series Mainframes will be supplied to accept 240 VAC, 3 phase, 4-wire, 50-60 Hz input power. Wiring diagram (included on the access cover) illustrates the variety of other voltage, phase and load balancing arrangements possible, such as: (380-415V, 3 phase, 5-wire, 50-60 Hz), (208-240V, single phase, 3-wire, 50-60 Hz) and (110-120V, single phase, 3-wire, 50-60 Hz).

These wiring adjustments can be performed in the field to suit the requirements of the application. If specified at the time of original order, DME will supply the Mainframe required.

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>W*</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFP5G</td>
<td>14 7/8</td>
</tr>
<tr>
<td>MFP8G</td>
<td>20 7/8</td>
</tr>
<tr>
<td>MFP12G</td>
<td>28 7/8</td>
</tr>
</tbody>
</table>

* Dimension does not include connectors

**NOTE:** Combination frames to accommodate both 15 and 30 AMP modules (with or without communications) are available by special order.

---

**MOLD POWER CABLE (10, 20 OR 30 FOOT)**

**THERMOCOUPLE CABLE (10, 20 OR 30 FOOT)**

**MOLD POWER INPUT CONNECTOR WITH NUMBERED POWER LEADS**

**INSULATED CRIMP CONNECTORS (INCLUDED WITH MOLD POWER INPUT CONNECTOR)**

**MAINFRAME WITH CIRCUIT BREAKER DISCONNECT IS STANDARD. CURRENT VOLTAGE MONITOR IS OPTIONAL.**
SMART SERIES MAINFRAMES
Optional Current Voltage Monitor is Factory Installed in CV-Style Frames

CABLES AND MOLD CONNECTORS REQUIRED
(Not included with Mainframes and Must be Ordered Separately)

<table>
<thead>
<tr>
<th>ZONES</th>
<th>MOLD POWER CABLES</th>
<th>THERMOCOUPLE CABLES</th>
<th>MOLD POWER INPUT CONNECTORS (INCL. CRIMP CONNECTORS)</th>
<th>THERMOCOUPLE CONNECTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)</td>
<td>C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)</td>
<td>QTY. ITEM NUMBER</td>
<td>QTY. ITEM NUMBER</td>
</tr>
<tr>
<td>5</td>
<td>1 MFC510G, C20 or C30</td>
<td>1 TS510C, C20 or C30</td>
<td>1 PIC5G</td>
<td>1 MTC5G</td>
</tr>
<tr>
<td>8</td>
<td>1 MFC810G, C20 or C30</td>
<td>1 TS810C, C20 or C30</td>
<td>1 PIC8G</td>
<td>1 MTC8G</td>
</tr>
<tr>
<td>12</td>
<td>1 MFC12C10G, C20 or C30</td>
<td>1 TS1210C, C20 or C30</td>
<td>1 PIC12G</td>
<td>1 MTC12G</td>
</tr>
<tr>
<td>16</td>
<td>2 MFC16C10G, C20 or C30</td>
<td>2 TS16C10G, C20 or C30</td>
<td>2 PIC16G</td>
<td>2 MTC16G</td>
</tr>
<tr>
<td>20</td>
<td>1 MFC20G, C20 or C30</td>
<td>1 TS20C, C20 or C30</td>
<td>1 PIC20G</td>
<td>1 MTC20G</td>
</tr>
<tr>
<td>24</td>
<td>2 MFC24G, C20 or C30</td>
<td>2 TS24C, C20 or C30</td>
<td>2 PIC24G</td>
<td>2 MTC24G</td>
</tr>
<tr>
<td>28</td>
<td>2 MFC28G, C20 or C30</td>
<td>2 TS28C, C20 or C30</td>
<td>2 PIC28G</td>
<td>2 MTC28G</td>
</tr>
<tr>
<td>32</td>
<td>1 MFC32G, C20 or C30</td>
<td>1 TS32C, C20 or C30</td>
<td>1 PIC32G</td>
<td>1 MTC32G</td>
</tr>
<tr>
<td>36</td>
<td>3 MFC36G, C20 or C30</td>
<td>3 TS36C, C20 or C30</td>
<td>3 PIC36G</td>
<td>3 MTC36G</td>
</tr>
<tr>
<td>40</td>
<td>2 MFC40G, C20 or C30</td>
<td>2 TS40C, C20 or C30</td>
<td>2 PIC40G</td>
<td>2 MTC40G</td>
</tr>
<tr>
<td>44</td>
<td>3 MFC44G, C20 or C30</td>
<td>3 TS44C, C20 or C30</td>
<td>3 PIC44G</td>
<td>3 MTC44G</td>
</tr>
<tr>
<td>48</td>
<td>4 MFC48G, C20 or C30</td>
<td>4 TS48C, C20 or C30</td>
<td>4 PIC48G</td>
<td>4 MTC48G</td>
</tr>
</tbody>
</table>

NOTE: For details on cables and connectors, see pages 130-132.

Terminal Mounting Boxes

<table>
<thead>
<tr>
<th>ZONES</th>
<th>ORDER ITEMS A and B or C FOR POWER INPUT CONNECTORS</th>
<th>ORDER ITEMS A and B or C FOR THERMOCOUPLE CABLES CONNECTORS</th>
<th>ORDER ITEMS A and B or C COMBINATION POWER &amp; TC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>QTY. ITEM NUMBER</td>
<td>QTY. ITEM NUMBER</td>
<td>QTY. ITEM NUMBER</td>
</tr>
<tr>
<td>5</td>
<td>1 PIC512TBG</td>
<td>1 MTC512TBG</td>
<td>1 PT512TBG</td>
</tr>
<tr>
<td>8</td>
<td>1 PIC812TBG</td>
<td>1 MTC812TBG</td>
<td>1 PT812TBG</td>
</tr>
<tr>
<td>12</td>
<td>1 PIC1212TBG</td>
<td>1 MTC1212TBG</td>
<td>1 PT1212TBG</td>
</tr>
<tr>
<td>16</td>
<td>2 PIC1612TBG</td>
<td>2 MTC1612TBG</td>
<td>2 PT1612TBG</td>
</tr>
<tr>
<td>20</td>
<td>2 PIC2012TBG</td>
<td>2 MTC2012TBG</td>
<td>2 PT2012TBG</td>
</tr>
<tr>
<td>24</td>
<td>3 PIC2412TBG</td>
<td>3 MTC2412TBG</td>
<td>3 PT2412TBG</td>
</tr>
<tr>
<td>28</td>
<td>4 PIC2812TBG</td>
<td>4 MTC2812TBG</td>
<td>4 PT2812TBG</td>
</tr>
</tbody>
</table>

NOTES: Combination terminal mounting boxes are available with connectors prewired to terminal strips. See page 135 for details. See page 136 for dimensional details. For below flush mounting of connectors, see mold pocket layouts on pages 133-134. See page 125 for current voltage monitor.
Smart Series® High Power Mainframes (30 AMP)

The 3 configurations illustrated at left provide 2, 3 or 5-zones of 30 AMP control for higher wattage heater applications. The Current Voltage monitor option will be factory installed when ordered at the same time as Mainframe. Control modules, cables, mold connectors and other accessories are ordered separately.

### Smart Series High Power Mainframes

Optional Current Voltage Monitor is Factory Installed in CV-Style Frames

<table>
<thead>
<tr>
<th>ZONES</th>
<th>&quot;MFHp&quot; Type for Temp Control</th>
<th>&quot;MFHp&quot; Type with Current Voltage Monitor</th>
<th>&quot;MFCHp&quot; Type for Temp Control and Communications</th>
<th>&quot;MFCHp&quot; Type with Current Voltage Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>MFHp2G</td>
<td>MFHp2GCV</td>
<td>MFHp2G</td>
<td>MFHp2GCV</td>
</tr>
<tr>
<td>3</td>
<td>MFHp3G</td>
<td>MFHp3GCV</td>
<td>MFHp3G</td>
<td>MFHp3GCV</td>
</tr>
<tr>
<td>5</td>
<td>MFHp5G</td>
<td>MFHp5GCV</td>
<td>MFHp5G</td>
<td>MFHp5GCV</td>
</tr>
</tbody>
</table>

### Cables and Mold Connectors Required

(Not included with Mainframes and Must be Ordered Separately)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1 MFCh23C10G, C20G or C30G</td>
<td>1 TC5C16G, C20G or C30G</td>
<td>1 PICH23G</td>
<td>1 MTC5G</td>
</tr>
<tr>
<td>3</td>
<td>1 MFCh23C10G, C20G or C30G</td>
<td>1 TC5C16G, C20G or C30G</td>
<td>1 PICH23G</td>
<td>1 MTC8G</td>
</tr>
<tr>
<td>5</td>
<td>1 MFCh5C10G, C20G or C30G</td>
<td>1 TC5C16G, C20G or C30G</td>
<td>1 PICH5G</td>
<td>1 MTC12G</td>
</tr>
</tbody>
</table>

### Terminal Mounting Boxes

<table>
<thead>
<tr>
<th>Zones</th>
<th>(A) For Power Input Connectors</th>
<th>(B) For Thermocouple Cables Connectors</th>
<th>(C) Combination Power &amp; TC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1 PICH23TBG</td>
<td>1 MTC5TBG</td>
<td>1 PTCH23TBG</td>
</tr>
<tr>
<td>3</td>
<td>1 PICH23TBG</td>
<td>1 MTC5TBG</td>
<td>1 PTCH23TBG</td>
</tr>
<tr>
<td>4</td>
<td>1 PICH6TBG</td>
<td>1 MTC5TBG</td>
<td>1 PTCH6TBG</td>
</tr>
</tbody>
</table>

**Note:** Combination frames to accommodate both 15 and 30 AMP modules (with or without communications) are available by special order.

**Note:** Combination frames to accommodate both 15 and 30 AMP modules (with or without communications) are available by special order.

**Note:** For details on cables and connectors, see pages 130-132.

**Note:** See page 135-136 for dimensional details. For below-flush mounting of connectors, see mold pocket layouts on pages 133-134.
Streamlined Design For Improved Performance
The new Current/Voltage Monitor is simple to operate and features a large easy-to-read digital display. Ease of operation has been enhanced by streamlining the unit and eliminating unnecessary switches and controls. When setting the selector switch to the desired zone number, the ‘AMPS’ function is selected. The meter will then display the amount of current being delivered by the selected module. Input voltage to the system can be measured by rotating the selector switch to one of the three ‘line voltage’ positions. This will set the meter in the ‘voltage’ function and display the voltage of the selected phase.

Current Supply To Each Zone
To monitor the current supply to each zone, simply set the rotary selector switch to the desired module zone number. The “AMPS” function is then automatically selected and is indicated by the letter ‘A’ just to the right of the numbers in the display window. The meter displays the current being delivered to the heater load in amperes.

Input Voltage From Each Phase
Set the rotary selector to the desired phase voltage position. This automatically selects the ‘volts’ function which is indicated when the letter ‘V’ appears to the right of the numbers in the display window. The meter will display the line voltage of the selected phase.

1. CIRCUIT BREAKER/DISCONNECT – Applies or removes power to all modules in the frame.
2. POWER ON LIGHT (amber) – Illuminates when CIRCUIT BREAKER is in the ON position.
3. AMPS/VOLTS METER – Digital multi-scale meter provides accurate readings of zone current (AMPS) or input voltage (VOLTS).
4. AMPS/VOLTS INDICATOR – Appears automatically when either AMPS or VOLTS is selected.
5. SELECTOR SWITCH – Multi-position switch automatically selects zone current or phase line voltage to be monitored. For systems with more than 12-zones, additional meter and selector switch panels are supplied.

Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltmeter Range</td>
<td>190 to 290 VAC (for 240 volt systems)</td>
</tr>
<tr>
<td></td>
<td>90 to 145 VAC (for 120 volt systems)</td>
</tr>
<tr>
<td>Voltmeter Accuracy</td>
<td>± 3% of reading, 50 to 60 Hz</td>
</tr>
<tr>
<td>Maximum Voltmeter Input</td>
<td>400 VAC</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>240/120 VAC, 50 to 60 Hz</td>
</tr>
<tr>
<td>Ammeter Range</td>
<td>0 to 2; 0 to 30; 0 to 40 Amperes</td>
</tr>
<tr>
<td>Ammeter Accuracy</td>
<td>± 2% @ 0 to 100% Duty Cycle, 50-60 Hz</td>
</tr>
<tr>
<td>Maximum Ammeter Input</td>
<td>30 Amperes</td>
</tr>
</tbody>
</table>

NOTE: The Digital Current/Voltage Monitor is a factory installed option which replaces the standard circuit breaker/disconnect, and is supplied when “CV-style” mainframes are ordered.

See pages 123 and 124 for appropriate mainframe item numbers.
Smart Series® Accessories

**Universal Floor Stand**
The Universal Floor Stand will accommodate all 15 or 30 amp Mainframes from one to four sections high. Stand is made from heavy gauge steel and includes locking casters (400 lb. rating). All assembly and Mainframe mounting hardware is included. Heavy duty floor stand available for larger systems (1000 lb. rating).

Floor stand comes with plates for 5-zone frame mounting on 8-zone “x” pattern

### Step-Down Transformer Kits (from 480 VAC to 240 VAC)
Transformer Kits are pre-wired and include enclosed transformer (480 VAC input, 240 VAC output) with adjustable transformer voltage taps, one 10-foot cable for AC power-in (no connector), one 6-foot cable for mainframe (AC input), one safety switch, two extra fuses, floor stand (MFS512G) and all mounting brackets and hardware required. Shipped with instructions for easy assembly.

- **Single section frames mount to front or rear of stand.**
- **Mainframe not included.**
- **Adapter plates for narrower frames available by special order.**
- * Comes with plates for mounting 8-zone on 12-zone “x” pattern
- **Supplied with MFS512GH for this transformer size or larger and transformers mounted flat.**

**NOTE:** Power capacity needed depends on total load of system (i.e. number of zones and heater load per zone).

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFS512G</td>
<td>400 LBS</td>
</tr>
<tr>
<td>MFS512GHD*</td>
<td>1000 LBS</td>
</tr>
</tbody>
</table>

* HD stand not shown.

Also Available:
1. Transformer only
2. Transformer and cables only
3. Transformers with other voltage or current capacities
4. Isolation Transformers

Contact DME for details and prices.

**Mainframe Blank Panels**
Used to cover unused zones in mainframes. Push-pull fasteners included in panel.

- **MFBP10G** covers one 15 AMP zone;
- **MFBP30G** covers one 30 AMP zone (or two 15 AMP zones).

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>AMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC1</td>
<td>1</td>
</tr>
<tr>
<td>ABC15</td>
<td>15</td>
</tr>
<tr>
<td>ABC10</td>
<td>10</td>
</tr>
<tr>
<td>13X10</td>
<td>10</td>
</tr>
<tr>
<td>13X15</td>
<td>15</td>
</tr>
<tr>
<td>RPM0123</td>
<td>15</td>
</tr>
<tr>
<td>RPM0124</td>
<td>.062</td>
</tr>
</tbody>
</table>

**Module Replacement Fuses**
(sold in packages of 5)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>AMPS</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWCC1</td>
<td>10-15</td>
<td>16-22 RED</td>
</tr>
<tr>
<td>HWCC3</td>
<td>10-15</td>
<td>14-16 BLUE</td>
</tr>
<tr>
<td>HWCC2</td>
<td>15-30</td>
<td>10-12 YELLOW</td>
</tr>
</tbody>
</table>

**NOTE:** Initial supply is provided with mold power input connectors.
### Standard Mainframe Connector Wiring

**Thermocouple Input Connector**

<table>
<thead>
<tr>
<th>ZONE</th>
<th>THERMOCOUPLE INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROW &quot;A&quot; TERMINALS 1 (WHT) + 2 (RED)</td>
</tr>
<tr>
<td>2</td>
<td>ROW &quot;A&quot; TERMINALS 3 (WHT) + 4 (RED)</td>
</tr>
<tr>
<td>3</td>
<td>ROW &quot;A&quot; TERMINALS 5 (WHT) + 6 (RED)</td>
</tr>
<tr>
<td>4</td>
<td>ROW &quot;A&quot; TERMINALS 7 (WHT) + 8 (RED)</td>
</tr>
<tr>
<td>5</td>
<td>ROW &quot;B&quot; TERMINALS 2 (WHT) + 3 (RED)</td>
</tr>
<tr>
<td>6</td>
<td>ROW &quot;B&quot; TERMINALS 4 (WHT) + 5 (RED)</td>
</tr>
<tr>
<td>7</td>
<td>ROW &quot;B&quot; TERMINALS 6 (WHT) + 7 (RED)</td>
</tr>
<tr>
<td>8</td>
<td>ROW &quot;C&quot; TERMINALS 1 (WHT) + 2 (RED)</td>
</tr>
<tr>
<td>9</td>
<td>ROW &quot;C&quot; TERMINALS 3 (WHT) + 4 (RED)</td>
</tr>
<tr>
<td>10</td>
<td>ROW &quot;C&quot; TERMINALS 5 (WHT) + 6 (RED)</td>
</tr>
<tr>
<td>11</td>
<td>ROW &quot;C&quot; TERMINALS 7 (WHT) + 8 (RED)</td>
</tr>
<tr>
<td>12</td>
<td>ROW &quot;A&quot; TERMINALS 9 (WHT) + ROW &quot;C&quot; TERMINALS 9 (RED)</td>
</tr>
</tbody>
</table>

- **Side of Mainframe**

**Power Output Connector**

**NOTE:**
1. Mating cable connectors are wired the same as frame connectors shown.
2. Wires in frames are color coded for reference when rewiring of frame connectors is necessary (see owner's manual).
3. All grounds must be connected to ensure operator safety.

### High Power Mainframe Connector Wiring

**Thermocouple Input Connector**

<table>
<thead>
<tr>
<th>ZONE</th>
<th>THERMOCOUPLE INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROW &quot;A&quot; TERMINALS 1 (WHT) + 2 (RED)</td>
</tr>
<tr>
<td>2</td>
<td>ROW &quot;A&quot; TERMINALS 3 (WHT) + 4 (RED)</td>
</tr>
<tr>
<td>3</td>
<td>ROW &quot;A&quot; TERMINALS 5 (WHT) + 6 (RED)</td>
</tr>
<tr>
<td>4</td>
<td>ROW &quot;A&quot; TERMINALS 7 (WHT) + 8 (RED)</td>
</tr>
<tr>
<td>5</td>
<td>ROW &quot;B&quot; TERMINALS 2 (WHT) + 3 (RED)</td>
</tr>
</tbody>
</table>

**For 5 Zone Connector (Shown):**

**Power Output Insert A**

<table>
<thead>
<tr>
<th>ZONE</th>
<th>INSERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&quot;A&quot; 1 + 2</td>
</tr>
<tr>
<td>2</td>
<td>&quot;A&quot; 3 + 4</td>
</tr>
<tr>
<td>3</td>
<td>&quot;A&quot; 5 + 6</td>
</tr>
</tbody>
</table>

**For 2 & 3 Zone Connector (With Insert "A" Only):**

**Power Output Insert B**

<table>
<thead>
<tr>
<th>ZONE</th>
<th>INSERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&quot;B&quot; 1 + 2</td>
</tr>
<tr>
<td>2</td>
<td>&quot;B&quot; 3 + 4</td>
</tr>
<tr>
<td>3</td>
<td>&quot;B&quot; 5 + 6</td>
</tr>
</tbody>
</table>
### Smart Series® Wiring Diagram with Smart Series® Mold Connectors

**Wiring Diagram for DME Hot Runner Molding System with Smart Series® Mold Connectors**

#### Before Power is Connected:
- **Mold Thermocouple Leads:**
  - Type J: 240V only

- **Manifold Heater:**
  - See page 135

- **Notes:**
  - All grounds must be connected to mold to ensure operator safety.
  - All clamp connections can be eliminated by using terminal mounting box with terminal strip.

#### Connections:
- **Blk & White Leads:**
  - Between black and white leads.
  - Check connections of black and white leads to ensure proper connection to the correct terminal.

- **Resistance:**
  - Heater powerlead and each thermocouple lead.
  - Resistance should be low.

**NOTES:**
- Use ohm meter to measure resistance between black and white leads.
- Use ohm meter to measure resistance between heater leads and ground.

### Table: Wiring Connections

<table>
<thead>
<tr>
<th>Zone</th>
<th>Wiring Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ROW A: TERMINALS 1-2</td>
</tr>
<tr>
<td>2</td>
<td>ROW A: TERMINALS 3-4</td>
</tr>
<tr>
<td>3</td>
<td>ROW A: TERMINALS 5-6</td>
</tr>
<tr>
<td>4</td>
<td>ROW A: TERMINALS 7-8</td>
</tr>
<tr>
<td>5</td>
<td>ROW B: TERMINALS 3-4</td>
</tr>
<tr>
<td>6</td>
<td>ROW B: TERMINALS 5-6</td>
</tr>
<tr>
<td>7</td>
<td>ROW C: TERMINALS 5-6</td>
</tr>
<tr>
<td>8</td>
<td>ROW C: TERMINALS 7-8</td>
</tr>
<tr>
<td>9</td>
<td>ROW A, B, C TERMINALS 9-12</td>
</tr>
<tr>
<td>10</td>
<td>ROW A, B, C TERMINALS 10-12</td>
</tr>
<tr>
<td>11</td>
<td>ROW A, B, C TERMINALS 11-12</td>
</tr>
<tr>
<td>12</td>
<td>ROW A, B, C TERMINALS 12-12</td>
</tr>
</tbody>
</table>

**NOTES:**
- All grounds must be connected to mold to ensure operator safety.
- All clamp connections can be eliminated by using terminal mounting box with terminal strip. See page 135.
B E F O R E  P O W E R  I S  C O N N E C T E D:

- USE OHM METER TO CHECK EACH HEATER POWER LEAD. RESISTANCE TO GROUND SHOULD BE GREATER THAN 20,000 OHMS.

- CHECK RESISTANCE* BETWEEN HEATER POWER LEADS.

<table>
<thead>
<tr>
<th>ZONE</th>
<th>TERMINAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 + 2</td>
</tr>
<tr>
<td>2</td>
<td>3 + 4</td>
</tr>
<tr>
<td>3</td>
<td>5 + 6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ZONE</th>
<th>BLACK</th>
<th>WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

B E F O R E  P O W E R  I S  C O N N E C T E D:

- CHECK CONNECTIONS OF BLACK AND WHITE LEADS TO ENSURE PROPER CONNECTION TO THE CORRECT TERMINAL.

- USE OHM METER TO MEASURE BETWEEN BLACK AND WHITE LEADS. RESISTANCE SHOULD BE LOW.

- USE OHM METER TO MEASURE BETWEEN EACH HEATER POWER LEAD AND EACH THERMOCOUPLE LEAD. RESISTANCE SHOULD BE GREATER THAN 20,000 OHMS.

NOTES: All grounds must be connected to mold to ensure operator safety. All crimp connections may be eliminated. Simply remove 6” leads from PIC connectors and wire directly.
Mold Power and Thermocouple Cables

Mold Power Cables are used to connect the Mainframe to the Power Input Connector on the mold. Available in lengths of 10, 20 or 30 feet. Integral retaining latches on both the frame and mold connectors provide secure cable connections. Connector configurations ensure proper insertion of cable. Cables are wired for 5, 8 or 12 zones (15 AMP) and 3 or 5 zones (30 AMP) for use with the appropriate Smart Series Mainframes and Mold Power Input Connectors.

Universal Mold Power Cable (15 AMP)
The MPC12C10G, 20G or 30G Mold Power Cable also serves as a universal cable for connecting any 15 AMP Smart Series Mainframe to any 15 AMP Mold Power Input Connector. The maximum number of zones will be determined by the connector in the mold.

Mold Power Cables (15 AMP Max)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FOR CONNECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPC5C10G</td>
<td>MPC5C20G</td>
<td>MPC5C30G</td>
<td>5</td>
<td>5, 8, 12 ZONE</td>
</tr>
<tr>
<td>MPC8C10G</td>
<td>MPC8C20G</td>
<td>MPC8C30G</td>
<td>8</td>
<td>8, 12 ZONE</td>
</tr>
<tr>
<td>MPC12C10G</td>
<td>MPC12C20G</td>
<td>MPC12C30G</td>
<td>12</td>
<td>12 ZONE</td>
</tr>
</tbody>
</table>

Mold Power Cables (30 AMP Max)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FOR CONNECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPCH23C10G</td>
<td>MPCH23C20G</td>
<td>3</td>
<td>2-3 ZONE</td>
</tr>
<tr>
<td>MPCH5C10G</td>
<td>MPCH5C20G</td>
<td>5</td>
<td>5 ZONE</td>
</tr>
</tbody>
</table>

Thermocouple Cables are used to connect the Mainframe to the Thermocouple Connector on the mold, and are available in lengths of 10, 20 or 30 feet. Integral retaining latches on both the frame and mold connectors provide secure cable connections. Connector configurations ensure proper insertion of cable. Cables available are wired for 5, 8 or 12 zones for use with the appropriate Smart Series Mainframes and Thermocouple Connectors.

Thermocouple Cables (for use with 15 or 30 AMP Mainframes)

These Thermocouple Cables serve as cables for connecting dissimilar Mainframes and Thermocouple Connectors. For example, the TC8C10G could be used to connect a 12-zone frame to an 8-zone MTC8G connector. The maximum number of zones will be determined by the connector in the mold.

Thermocouple Cables

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>ITEM NUMBER</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>FOR CONNECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC5C10G</td>
<td>TC5C20G</td>
<td>TC5C30G</td>
<td>5</td>
<td>5, 8, 12 ZONE</td>
</tr>
<tr>
<td>TC8C10G</td>
<td>TC8C20G</td>
<td>TC8C30G</td>
<td>8</td>
<td>8, 12 ZONE</td>
</tr>
<tr>
<td>TC12C10G</td>
<td>TC12C20G</td>
<td>TC12C30G</td>
<td>12</td>
<td>12 ZONE</td>
</tr>
</tbody>
</table>

* Used with all 30 AMP Mainframes.
RoHS/WEEE Compliant: Mold Power Input Connectors

For 15 AMP Applications

Mold Power Input Connectors are mounted on the mold to accept power cable(s) from the Mainframe. They are supplied with six inches of numbered leads and a ground wire. All three 15 AMP connectors are the same physical size and use 14-gauge wire. Only the number of active pins change. The 30 AMP connectors are supplied with 10-gauge leads and are attached to screw terminals. Each is equipped with an integral retaining latch to provide a secure cable connection. Connector configuration ensures proper insertion of cable. Splicing of 6" leads to heater power leads is easily accomplished with the Insulated Crimp Connectors supplied.

NOTES:
Connector PICH23G is dimensionally identical to thermocouple connector MTC8G. See next page.

For PICH23G and PIC5G, direct wiring without crimp connectors is possible by removing 6" leads.

NOTE: Ground wire must be connected to mold to ensure operator safety.

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>NUMBER OF ZONES (MAX.)</th>
<th>AMPS (MAX.) PER ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC5G</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>PIC8G</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>PIC12G</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>PICH23G</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>PICH5G</td>
<td>5</td>
<td>30</td>
</tr>
</tbody>
</table>

NOTE: Replacement parts and extraction tools can be found on page 146

For 30 AMP Applications

Insulated Crimp Connectors

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>AMPS</th>
<th>FOR WIRE GAUGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWCC1</td>
<td>10-15</td>
<td>16-22</td>
</tr>
<tr>
<td>HWCC3</td>
<td>15</td>
<td>14-16</td>
</tr>
<tr>
<td>HWCC2</td>
<td>30</td>
<td>10-12</td>
</tr>
</tbody>
</table>

NOTE: Initial supply is provided with mold power input connectors. Also, see page 126.
Thermocouple Connectors are mounted on the mold to use with thermocouple cable(s) from the Mainframe. Screw type terminals for use with iron(+) and constantan(-) thermocouple leads are numbered and coded on the side and bottom of each connector. All three connectors are equipped with integral retaining latches to provide a secure cable connection. Connector configuration ensures proper insertion of cable. Pins are made of copper alloy and are silver plated. Experience has proven that iron and constantan are not required.

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>NUMBER OF PINS</th>
<th>DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTC5G</td>
<td>10</td>
<td>M2: 3.268</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H: 3.662</td>
</tr>
<tr>
<td>MTC8G</td>
<td>16</td>
<td>M2: 4.055</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H: 4.449</td>
</tr>
<tr>
<td>MTC12G</td>
<td>24</td>
<td>M2: 5.118</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H: 5.512</td>
</tr>
<tr>
<td>TPC0001</td>
<td>48</td>
<td>M2: 5.827</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H: 6.496</td>
</tr>
</tbody>
</table>

**NOTE:** MOLD POWER INPUT CONNECTOR PICH23G IS DIMENSIONALLY IDENTICAL TO MTC8G

**SMART SERIES®**

RoHS/WEEE Compliant: Mold Thermocouple Connectors

* Use with 2, 3 and 5-zone, 30 AMP mainframes
Where space or mold handling and storage requirements do not permit the use of Terminal Mounting Boxes, the connectors can be below-flush or surface mounted. See drawings below and next page for dimensions.

### Below-Flush and Surface Mounting of Mold Power Input Connectors (15 AMP)

**NOTE:** Disregard dimensions marked with * for surface mounting.

### Below-Flush and Surface Mounting of Thermocouple Connectors

**NOTE:** Mold power input connector PICH23G is dimensionally identical to MTC8G.

**NOTE:** Fasten ground wire (GREEN) to a convenient place in pocket.

**NOTE:** Drawing depicts below-flush mounting. Disregard dimensions marked with * for surface mounting.
Below-Flush and Surface Mounting of Mold Power Input Connectors (30 AMP)

NOTE: Drawing depicts below-surface mounting. Disregard dimensions marked with * for surface mounting.

For PICH5G

(Use pocket dimensions shown on pages 131-132 as detailed for thermocouple connector MTC8G.)
Pre-wired Combination Terminal Mounting Boxes

Includes terminal strip for ease of wiring, all necessary connectors installed, and power connector pre-wired to a terminal strip. All units shown without covers.

PTC2TBGTS is not to be used with SSH1022, SSH1021, MFP1G, MFP1G1, MFP2G, MFPR2G controls & mainframes.

Combination Terminal Mounting Boxes – with Terminal Strip

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>X</th>
<th>Y</th>
<th>H</th>
<th>M1</th>
<th>M2</th>
<th>ACCEPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC210TBGTS*</td>
<td>2.75</td>
<td>4.88</td>
<td>4.25</td>
<td>1.500</td>
<td>4.250</td>
<td>MPC10/MPC20</td>
</tr>
<tr>
<td>PTC2TBGTS*</td>
<td>2.75</td>
<td>4.88</td>
<td>4.25</td>
<td>1.500</td>
<td>4.250</td>
<td>PTC0110/PTC0120</td>
</tr>
<tr>
<td>PTC5TBGTS**</td>
<td>2.75</td>
<td>8.66</td>
<td>4.25</td>
<td>1.500</td>
<td>8.031</td>
<td>MPC5C(10 or 20)(G)/TC5C(10 or 20)(G)</td>
</tr>
<tr>
<td>PTC8TBGTS**</td>
<td>2.75</td>
<td>9.47</td>
<td>4.25</td>
<td>1.500</td>
<td>8.843</td>
<td>MPC8C(10 or 20)(G)/TC8C(10 or 20)(G)</td>
</tr>
<tr>
<td>PTC12TBGTS**</td>
<td>2.75</td>
<td>10.53</td>
<td>4.25</td>
<td>1.500</td>
<td>9.906</td>
<td>MPC12C(10 or 20)(G)/TC12C(10 or 20)(G)</td>
</tr>
<tr>
<td>PTC24TBGTS**</td>
<td>4.18</td>
<td>10.53</td>
<td>4.10</td>
<td>3.25</td>
<td>9.91</td>
<td>(2) MPC12C(10 or 20)(G)/ (2) TC12C(10 or 20)(G)</td>
</tr>
<tr>
<td>PTC36TBGTS**</td>
<td>4.18</td>
<td>16.50</td>
<td>4.10</td>
<td>3.25</td>
<td>15.88</td>
<td>(3) MPC12C(10 or 20)(G)/ (3) TC12C(10 or 20)(G),</td>
</tr>
<tr>
<td>PTC5TBTS**</td>
<td>5.00</td>
<td>6.13</td>
<td>5.12</td>
<td>2.625</td>
<td>5.000</td>
<td>MPC5C(10 or 20)(G)/TC5C(10 or 20)(G)</td>
</tr>
<tr>
<td>PTC8TBTS**</td>
<td>5.00</td>
<td>6.13</td>
<td>5.12</td>
<td>2.625</td>
<td>5.000</td>
<td>MPC8C(10 or 20)(G)/TC8C(10 or 20)(G)</td>
</tr>
<tr>
<td>PTC12TBTS**</td>
<td>5.00</td>
<td>6.13</td>
<td>5.12</td>
<td>2.625</td>
<td>5.000</td>
<td>MPC12C(10 or 20)(G)/TC12C(10 or 20)(G)</td>
</tr>
</tbody>
</table>

** Comes with all necessary connectors installed and power connector pre-wired to a terminal strip.
* Power and thermocouple connectors are pre-wired.
Terminal Mounting Boxes

Terminal Mounting Boxes for Mold Power Input Connectors

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>X</th>
<th>Y</th>
<th>H</th>
<th>M1</th>
<th>M2</th>
<th>ACCEPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC512TBG</td>
<td>2.75</td>
<td>4.875</td>
<td>4.25</td>
<td>1.500</td>
<td>4.250</td>
<td>PIC5, 8 or 12G</td>
</tr>
<tr>
<td>PICH23TBG</td>
<td>2.75</td>
<td>5.614</td>
<td>4.25</td>
<td>1.500</td>
<td>4.990</td>
<td>PICH23G</td>
</tr>
<tr>
<td>PICH5TBG</td>
<td>4.46</td>
<td>6.676</td>
<td>4.25</td>
<td>3.250</td>
<td>6.052</td>
<td>PICH5G</td>
</tr>
</tbody>
</table>

Terminal Mounting Boxes for Thermocouple Connectors

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>X</th>
<th>Y</th>
<th>H</th>
<th>M1</th>
<th>M2</th>
<th>ACCEPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTC5TBG</td>
<td>2.75</td>
<td>4.875</td>
<td>4.25</td>
<td>1.500</td>
<td>4.250</td>
<td>MTC5G</td>
</tr>
<tr>
<td>MTC8TBG</td>
<td>2.75</td>
<td>5.614</td>
<td>4.25</td>
<td>1.500</td>
<td>4.990</td>
<td>MTC8G</td>
</tr>
<tr>
<td>MTC12TBG</td>
<td>2.75</td>
<td>6.676</td>
<td>4.25</td>
<td>1.500</td>
<td>6.052</td>
<td>MTC12G</td>
</tr>
</tbody>
</table>

Combination Terminal Mounting Boxes

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>X</th>
<th>Y</th>
<th>H</th>
<th>M1</th>
<th>M2</th>
<th>ACCEPTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC210</td>
<td>2.75</td>
<td>4.88</td>
<td>4.25</td>
<td>1.500</td>
<td>4.250</td>
<td>(2) CKPTIC1</td>
</tr>
<tr>
<td>PTC5TBG</td>
<td>2.75</td>
<td>8.66</td>
<td>4.25</td>
<td>1.500</td>
<td>8.031</td>
<td>PIC5G, MTC5G</td>
</tr>
<tr>
<td>PTC8TBG</td>
<td>2.75</td>
<td>9.47</td>
<td>4.25</td>
<td>1.500</td>
<td>8.843</td>
<td>PIC8G, MTC8G</td>
</tr>
<tr>
<td>PTC12TBG</td>
<td>2.75</td>
<td>10.53</td>
<td>4.25</td>
<td>1.500</td>
<td>9.906</td>
<td>PIC12G, MTC12G</td>
</tr>
<tr>
<td>PTC8HTBG**</td>
<td>4.46</td>
<td>4.88</td>
<td>4.25</td>
<td>3.250</td>
<td>4.250</td>
<td>ACI240MI, TCS1</td>
</tr>
<tr>
<td>PTC8HTBG**</td>
<td>2.75</td>
<td>10.53</td>
<td>4.25</td>
<td>1.500</td>
<td>9.906</td>
<td>PIC12G, MTC12G</td>
</tr>
<tr>
<td>PTC5TBG</td>
<td>4.46</td>
<td>11.06</td>
<td>4.25</td>
<td>3.250</td>
<td>10.431</td>
<td>PIC5G, MTC5G</td>
</tr>
<tr>
<td>PTC0012</td>
<td>4.46</td>
<td>7.66</td>
<td>4.25</td>
<td>3.350</td>
<td>7.160</td>
<td>TPC0001</td>
</tr>
</tbody>
</table>

† Overall dimensions shown include allowances for hardware (assembly screws) but not connectors (example: For Item Number PTC0012 the “X” dimension is 4.29 not including screw heads)

* Used with 2-zone, 15 AMP mainframe MFFPR2G  ** Used with 1-zone, 30 AMP mainframe MFHP1G

Terminal Mounting Boxes

Terminal Mounting Boxes provide the easiest and most economical method of mounting power and thermocouple connectors on the mold. Constructed of plated heavy gauge steel, each box is precut and drilled for quick mounting of the connector to the box, and box to the mold. Connector mounting hardware is supplied. Connectors are ordered separately.
SMART SERIES®

RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Digital Display and Setpoint Pushwheel

SSM1512/11 (15 AMP) & SSM3012 (30 AMP)
The SSM1512 is the second generation of the popular SSM15G. This version maintains simplicity of operation with simultaneous display of setpoint and temperature. Other new, improved, and unique features include:

Key Features
• Large Digital Display
  - For easier readability of temperature, % power and faults
• Setpoint Pushwheel
  - For setting desired setpoint temperature
  - Allows adjustment of setpoint before turning power on
• Auto % Power Display
  - Shows % power output while in AUTO mode
  - Indicates average % power requirement on thermocouple failure
  - Serves as a diagnostic tool for solving hot runner system problems

Operational Refinements
• Improved SmartStart®
  - A more gradual temperature rise leads to a more effective heater dry-out period, thereby extending heater life
  - SmartStart® now available in MANUAL mode (optional)
• SelectiveCycle®
  - A very high speed power output approach
  - Enables accurate temperature control and longer heater life
• Bumpless Transfer
  - When a thermocouple failure occurs, operation is automatically continued with a learned % power
  - Unique software accurately assigns percent power setting
• Third Fuse
  - Allows for alarm output when the load fuses are blown
  - Protects module from application of excessive voltage
• Anti-Arcing Feature
  - Protects circuit board from damage when module is either inserted or removed under power

Switchable Options
• Boost, Idle and Power Off Features
  - Provides system-wide adjustment of temperatures
  - Enables alarm audio/visual output and remote alarms
  - Requires TAS0512 module and communications mainframe
  - Requires TAS module or mainframe communications are not required
  - Requires TAS module or mainframe communications are not required
  - For easier detection of faults
• Unique AutoBoost Option
  - Instantaneously opens frozen gates on startup
  - TAS module or mainframe communications are not required
• Lights Out Feature
  - After stabilizing at setpoint, display turns off; when a fault occurs, display is turned on and flashes
• Shorted Thermocouple Sensitivity Adjustment
  - Operation can be tailored to fast or slow reaction times
  - Sensitivity can be adjusted with internal switches
  - Very useful for manifold zones with long startup times
• Switchable °C/°F Operation
  - Scale indicated at startup
• K Type Thermocouple Support
• Cut Feature
  - Gain cut feature for small nozzles and heaters with ungrounded internal thermocouples

NOTE: SSM3012 is twice as wide as above and has circuit breaker instead of power on/off switch.
**Smart Series®**

**RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Digital Display and Setpoint Pushwheel**

### SSM1512/11 (15 AMP) & SSM3012 (30 AMP)

<table>
<thead>
<tr>
<th>MODULE ITEM NUMBER</th>
<th>VOLTAGE (VAC)</th>
<th>AMPS</th>
<th>WATTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSM1512</td>
<td>240</td>
<td>15</td>
<td>3600</td>
</tr>
<tr>
<td>SSM1511</td>
<td>120</td>
<td>15</td>
<td>1800</td>
</tr>
<tr>
<td>SSM3012</td>
<td>240</td>
<td>30</td>
<td>7200</td>
</tr>
</tbody>
</table>

**NOTE:** Standard (240 VAC) modules are compatible with mainframes wired for either 240 VAC three phase (standard) or 240 VAC single phase.

### Front Panel Controls and Indicators

1. **Process Temperature Display**
   Indicates process temperature, thermocouple faults and other operational modes. Displays % power when switch (3) is in “% Auto” position.

2. **Temperature Deviation Lights**
   Indicates deviation from setpoint. Outer lights blink when temperature is more than ±40˚F (22˚C) from setpoint.

3. **Auto/Manual/Auto % Power Switch**
   Selects AUTO or MANUAL control mode. Shows % power when pressed into “% AUTO” position.

4. **LED Mode Indicators**
   Left LED illuminates during MANUAL mode.
   Right LED illuminates when power is supplied to heater.
   Right LED blinks on and off during SmartStart®.

5. **Setpoint Pushwheel**
   Three-digit switch programs setpoint in AUTO mode. Right two digits program % power in MANUAL mode.

6. **Power On/Off Switch**
   Controls AC power to module.

### Front Panel Digital LED Indicators

- **BACKWARD THERMOCOUPLE**
- **SHORTED THERMOCOUPLE**
- **OPEN THERMOCOUPLE**
- **BUMPLESS TRANSFER**
- **POWER OFF**
- **STANDBY HEAT**
- **BOOST**
- **TEMP MODE FAHRENHEIT**
- **TEMP MODE CENTIGRADE**
- **PROCESS TEMP**
- **MANUAL % POWER**
- **FRONT PANEL LOCKOUT**
- **LOCKOUT ERROR**

---

**Warranty:**
Two years
(excluding triac and fuses)

**Fuse Requirements**
(15 AMP only)
(2) ABC15 fuses (Bussman only)
(2) spare fuses included with module
Smart Series®

RoHS/WEEEE Compliant: Microprocessor-Based Temperature Control Modules with Dual Digital Display

DSS1512/11 (15 AMP) & DSS3012 (30 AMP)

The DSS15 Smart Series Module has dual digital displays providing readouts of both process and setpoint temperatures at a glance. Closed-loop, fuzzy logic PID control, and auto-tuning of PID parameters provide precise control even under the most adverse processing conditions.

In the event of a thermocouple failure, the DSS can automatically invoke bumpless transfer to a percent power mode based on the last valid percentage learned before the thermocouple failure. If desired, manual bumpless transfer may be selected, in which case a thermocouple fault will turn off power to the heater until the manual percent power mode is activated by the operator.

A unique feature of the DSS is a 100% power option. For a switch-selectable, interval of 15 or 30 seconds, full power can be immediately delivered to the heater to rapidly break through frozen gates to achieve quicker start-ups. The 100% power mode can be disengaged at any time by simply pressing any front panel button.

Indicator lights provide quick reference for module control modes, temperature deviation and blown fuses. The process temperature display also provides quick diagnostics of thermocouple faults, using the following abbreviated codes:

- Shi = Shorted Thermocouple
- oPi = Open Thermocouple
- bci = Reversed Thermocouple

The DSS module also includes a Smart Start® mode to safely bake out damaging internal heater moisture at system start-up and to prolong heater life. Fast or slow load modes may also be selected to protect smaller heaters or compensate for “slow” loads such as externally heated manifolds.

An accurate, durable and full-featured module, the DSS is fully compatible with all Smart Series or G-Series® 15 AMP mainframes.

Front Panel Controls and Indicators

1. Smart Start Light
   Indicates Smart Start is on.

2. Process Temperature Display
   Indicates process temperature and thermocouple faults as described above.

3. Temperature Deviation Lights
   Indicates deviation from setpoint. Outer lights blink at more than ±30°F from setpoint.

4. Setpoint Display
   Indicates setpoint temperature or percent power, depending on controller mode.

5. Auto/Manual Switch
   Selects auto or manual control mode.

6. Auto Light
   Indicates auto mode.

7. Manual Light
   Indicates manual mode.

8. 100% Power Switch
   Indicates 100% power output for selectable interval of 15 or 30 seconds.

9. 100% Power Light
   Indicates 100% power mode.

10. Up Arrow
    Increases desired setpoint value.

11. Down Arrow
    Decreases desired setpoint value.

12. F1/F2 Lights
    Illuminate when fuse is blown.

13. Power On/Off Switch

Front Panel Digital LED Indicators

NOTE: DSS3012 is twice as wide as above; has circuit breaker instead of F1/F2 lights and power on/off switch.
Smart Series®

Microprocessor-Based Temperature Control Modules with Dual Digital Display

DSS1512/11 (15 AMP) & DSS3012 (30 AMP)

Performance Specifications

### Auto and Manual Control Modes:
Time proportioning/Selective Cycle®

### Temperature Range:
Ambient to 999°F (537°C)

### Control Accuracy:
±1°F (0.5°C) dependent on the total thermal system

### Temperature Stability:
± 0.5% of full scale over the ambient range of 32 to 120°F (0 to 50°C)

### Calibration Accuracy:
Better than 0.2% of full scale

### Power Response Time:
0.538 seconds.

### Manual Control:
Adjustable from 0-100%, maintains output power to within 1% of set point.

### Smart Start®:
Linear voltage ramping.

### Maximum Smart Start Duration:
5 minutes.

### 100% Power:
Applies 100% power to the output. Software selectable inhibit or S = 15, I = 30 seconds.

### Operational Mode Priority:
- Smart Start precedes auto mode.
- Thermocouple (T/C) break, reversed or shortened T/C overrides Smart Start and auto modes.
- Manual control overrides auto mode, T/C breaks, reversed or shortened thermocouples.
- Output is inhibited during all fault conditions

### Input Specifications

#### Thermocouple Sensor:
Type J, grounded or ungrounded.

#### External T/C Residence:
Less than 0.1°F/Ω.

#### T/C Break, Reversed & Shorted Protection:
Automatically inhibits power to heater unless bumpless transfer is invoked.

#### Cold Junction Compensation:
5.6 Megohms

#### Input Impedance:
Greater than 110dB.

#### Input Amplifier Stability:
Greater than 120dB.

#### Power Supply Rejection:
Greater than 110dB.

### Output Specifications

#### Voltage Power Capability:
- 15 AMP: 240 nominal, single phase, 120 VAC available, 15 amperes, 3600 watts @ 240 VAC (1800 watts @ 120 VAC).
- 30 AMP: 30 amperes, 7200 watts @ 240 VAC

#### Output Drive:
Internal solid state triac, triggered by zero AC crossing pulses.

#### Overload Protection:
15 AMP: Fuses are provided on both sides of AC line.

#### Overload Protection:
30 AMP: Fast acting circuit breaker.

#### Transient Protection:
dV/dt and transient pulse suppression included.

#### Power Line Isolation:
Optically and transformer isolated from AC lines. Isolation voltage is greater than 2500 volts.

### Controls and Indicators

#### Auto/Manual Selection:
Push-button switch with LED indicators adjacent to switch.

#### Setpoint Adjustment:
Push-button switch up & down arrow keys.

#### 100% Power Selection:
Push-button switch with LED indicator adjacent.

#### Power On/Off:
16 AMP rocker switch (15 AMP) or 30 AMP circuit breaker (30 amp). Both are UL, CSA, VDE approved.

#### Setpoint Display:
Three 0.4", seven segment digit display.

#### Process Display:
Three 0.56", seven segment digit display. Also displays alarm codes and flashing “100” for 100˚ power operation.

#### 100% Power Indication:
Red LED adjacent to 100% power key flashes. Process display flashes “100.”

#### Auto Indication:
Illuminates green LED adjacent to Auto/Man key.

#### Manual Indication:
Illuminates yellow LED adjacent to Auto/Man key.

#### Smart Start Indication:
Illuminates green LED above the process display.

#### Shorted T/C Indication:
Flashes “Shi” in process display.

#### Opened T/C Indication:
Flashes “oPi” in process display.

#### Reversed T/C Indication:
Flashes “bci” in process display.

#### Temperature Deviation Indicators:
Five separate LEDs: ±20°F/11°C = Red
±10°F/5°C = Yellow
0˚ = Green.

#### Blown Fuse Indicators:
2 neon indicators (15 AMP only)

### Electrical Power Specifications

#### Input Voltage:
240/120 VAC + 10% -15%

#### Frequency:
50/60 Hz

#### DC Power Supplies:
Internally generated, regulated and compensated

#### Module Power Usage:
Less than 8 watts, excluding load.

#### Dimensions:
15 AMP: 2”W x 7”H x 7” / 2”D (5.08 x 17.78 x 19.05 cm)
30 AMP: 4”W x 7”H x 7” / 2”D (10.06 x 17.78 x 19.05 cm)

### Smart Series Microprocessor-Based Temperature Control Modules

<table>
<thead>
<tr>
<th>(240 VAC, standard)</th>
<th>AMPS</th>
<th>WATTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM NUMBER</td>
<td>DSS1512</td>
<td>15</td>
</tr>
<tr>
<td>DSS3012</td>
<td>30</td>
<td>7200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(120 VAC, optional)</th>
<th>AMPS</th>
<th>WATTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITEM NUMBER</td>
<td>DSS1511</td>
<td>15</td>
</tr>
</tbody>
</table>

**NOTE:** Standard (240 VAC) modules are compatible with mainframes wired for either 240 VAC three phase (standard) or 240 VAC single phase.

**FOR °C OPERATION:** Switch to °C on front panel.

**FUSE REQUIREMENTS (15 AMP ONLY):**
(2) ABC15 Fuses (Bussman only)

**NOTE:** Two years (excluding triac and fuses)

**WARRANTY:** Two years (excluding triac and fuses)

DSS1512/11 (15 AMP) & DSS3012 (30 AMP)
TSM-15-12

The TSM15 Smart Series Module has a color touch screen digital display providing readouts for Actual Temperature, Current Mode, Percentage Power and Current Reading. Closed-loop, fuzzy logic PID control, and auto-tuning of PID parameters provide precise control even under the most adverse processing conditions.

In the event of a thermocouple failure, the TSM can automatically invoke bumpless transfer to a percent power mode based on the last valid percentage learned before the thermocouple failure. If desired, manual bumpless transfer may be selected, in which case a thermocouple fault will turn off power to the heater until the manual percent power mode is activated by the operator.

The TSM boost level option limits boosting of the temperature by 75°C or 135°F to limit the degradation of material.

The TSM module also includes a Smart Start® mode to safely bake out damaging internal heater moisture at system start-up and to prolong heater life. Fast or slow load modes may also be selected to protect smaller heaters or compensate for “slow” loads such as externally heated manifolds. An accurate, durable and full-featured module, the TSM is fully compatible with all Smart Series or G-Series® 15 AMP mainframes.

Leak Detection capabilities (reference TSM1512 User Manual)

TSM15 SmartSeries® Controller with Default Settings (Factory Settings)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone temperature</td>
<td>260°C or 500°F</td>
</tr>
<tr>
<td>Standby level</td>
<td>100°C or 180°F</td>
</tr>
<tr>
<td>Boost level</td>
<td>75°C or 135°F</td>
</tr>
<tr>
<td>Over temperature range</td>
<td>10°C or 18°F</td>
</tr>
<tr>
<td>Under temperature range</td>
<td></td>
</tr>
<tr>
<td>Ramp</td>
<td>On</td>
</tr>
<tr>
<td>Auto-Manual</td>
<td>On</td>
</tr>
<tr>
<td>Extended alarms for Manual, Standby and Boost</td>
<td>Off</td>
</tr>
</tbody>
</table>

When reconfiguring your controller for a new tool or environment, this chapter of the manual shows how to alter controller default settings to your preferred values and afterward to save them.

Should anything seem wrong with your new settings then it is possible to restore the default settings at any time.
Individual Card Diagnostics

The control system has several features which provide a diagnosis of faults in the control system, the tool heaters and thermocouple sensors.

If a zone temperature is seen to deviate from the actual setting beyond the alarm limits then the display will change to White text in Red box and generate a remote alarm.

The following is a list of alarm conditions that may be detected and which will also activate the output contacts.

<table>
<thead>
<tr>
<th>ERROR MESSAGE</th>
<th>CAUSE</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERR!</td>
<td>Little or no temperature rise has been detected in that zone. When the console starts to apply power it expects to see an equivalent heat rise at the thermocouple. If the thermocouple has been trapped and pinched elsewhere in the tool or cable then it cannot sense the full heat rise that occurs at the tip. If left uncorrected, there is a danger that the zone could overheat and damage the tip. Instead the circuit maintains the output at whatever level it reached when the monitor circuit detected the fault.</td>
<td>Check thermocouple wiring; it may be reversed. Heater wiring may be faulty or element may be open circuit.</td>
</tr>
<tr>
<td>FUSE</td>
<td>The output fuse for that zone has failed. Please note: A fuse can only fail due to a fault external to the controller. Identify and rectify the fault before replacing the fuse. Note: The fuse detection circuit requires a continuous low level current through a high impedance bleed resistor to maintain the alarm condition. As a result the load circuit is still connected to the main’s voltage supply and it is not safe to attempt to repair or replace the fuse without first isolating the circuit. If the fuse in question is mounted on a control card then it is safe to unplug the board in order to isolate the circuit and replace the fuse on the card.</td>
<td>Replace the fuse with one of the same rating and type; i.e. High Rupture Current load fuse. The blown fuse is located on the control card.</td>
</tr>
<tr>
<td>GND</td>
<td>The system has detected an ground fault.</td>
<td>Check your heater wiring for a low impedance path to the ground.</td>
</tr>
<tr>
<td>LINE</td>
<td>No mains supply synchronization pulses being received. The 3-phase supply is used in a cross-over detection circuit to generate timing pulses for accurate phase control and firing the triac. If the phase detection fails on one or two phases then there is no pulse to use to measure phase angle and the LINE error message is generated. Meanwhile, all circuits on the healthy phases will continue to work normally.</td>
<td>There is a phase detection circuit on each TMS15-Series card and a common phase detection circuit on all other controller types. Although a fault in such circuits may cause the LINE error message, such fault is very rarely seen. The most common error is either the absence of one phase or, if a plug has been re-wired incorrectly, a swapped phase and neutral. If a LINE error message occurs then switch off and isolate the controller then check supply wiring for presence of all three phases.</td>
</tr>
<tr>
<td>REV</td>
<td>The card has detected an abnormal input at the T/C termination that indicates a shorted or reversed thermocouple.</td>
<td>If the REV alarm persists, switch off the controller and investigate the offending zone.</td>
</tr>
<tr>
<td>T/C</td>
<td>An open circuit thermocouple has been detected and no auto-response has been selected in the T/C Open Error column of the Setup page.</td>
<td>For immediate recovery, change to open loop control. Make a note of the above action so that when the controller is free you can check to see whether the input fuse on the control card has ruptured. If the fuse is good then you may need to check the wiring for faults or even replace the thermocouple.</td>
</tr>
</tbody>
</table>
TAS0512/11 Temperature Alarm Function

- Provides alarm for over or under temperature, or diagnostic error
- Provides visual and audible indications of an alarm
- The audible alarm (2) can be turned on or off with switch (4)
- Relay contacts (5) are provided to allow hook-up of remote equipment such as a light, a conveyor or a machine function
- Relay contacts are unaffected by the position switch (4)
- An infinite number of zones of control can be monitored as long as they are contained within the same communications-style mainframe as the TAS module

System Control Functions

Up to 63 zones can be controlled remotely at one time. These zones must be contained within the same communications-style mainframe as the TAS module.

NORMAL / IDLE

- Rotary switch (6) provides remote control of DSS1502/01, DSS1512/11, CSS1502/01, SSM1502/01, and SSM1512/11
- Control modules can all be commanded to respond from NORMAL to IDLE (Standby Heat)
- In IDLE, the modules will adjust to a setting of 93°C (200°F)

Exceptions: SSM1502/01 and SSM1512/11 adjust to a setting of 100°C (212°F)
- Moving the rotary switch back to NORMAL restores all modules to their established setpoints
- The user can select IDLE for temporary lowering of all zones to prevent material degradation
- This feature can be used to keep heaters warm enough to prevent absorption of moisture

BOOST / OFF

- The SSM1502/01 and SSM1512/11 can be placed into BOOST and OFF
- BOOST will raise the setpoint of the module by 10, 20, or 30%  
- OFF shuts off power to the theater but allows the user to monitor cool down of the hot runner system
- Each SSM1502/01 and SSM1512/11 can be individually programmed to respond to OFF, IDLE and BOOST commands
- The user can quickly drive all nozzle zones into BOOST to open frozen gates

Front Panel Controls and Indicators

1. Power On Indicator: LED illuminates when power is applied to the module.
2. Audible Alarm: Emits a loud audible alarm when the alarm switch (4) is placed in the “1” position (ON) and an alarm condition is sent by a compatible control module.
3. Alarm Indicator: LED illuminates when an alarm condition is sent by a compatible module.
4. Audio Alarm On/Off Switch: Turns the audio alarm (2) on or off.
5. Alarm Relay Connector: Provides relay contacts for use with remote equipment. Mating connector is supplied.
6. System Control Switch: Activates the OFF, IDLE and BOOST mode in all compatible modules.
7. Power On/Off Switch: Controls AC power to the module.
**NOTE:** Standard (240 VAC) modules are compatible with mainframes wired for either 240 VAC three-phase (standard) or 240 VAC single-phase. Use TAS0511 for 120 VAC operation.

**FUSE REQUIREMENTS:** (2) ABC1 fuses. NOTE: (2) spare fuses included with module.

**WARRANTY:** Two years (excluding fuses).

### TAS Module Compatibility

<table>
<thead>
<tr>
<th>MODULE</th>
<th>FUNCTIONS</th>
<th>VOLTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSM1502/01/12/11</td>
<td>ALARM</td>
<td>✔</td>
</tr>
<tr>
<td>SSM3002/12</td>
<td>ALARM</td>
<td>✔</td>
</tr>
<tr>
<td>DSS1502/01/12/11</td>
<td>ALARM</td>
<td>✔</td>
</tr>
<tr>
<td>DSS3002/12</td>
<td>ALARM</td>
<td>✔</td>
</tr>
<tr>
<td>TSM1512</td>
<td>ALARM</td>
<td>✔</td>
</tr>
</tbody>
</table>

The "BOOST" setting is the NORMAL setpoint plus 10, 20, or 30%; for example, if setpoint = 500°F and BOOST is 10%, then BOOST temperature = 550°F.

**NOTE:** TAS module is not compatible with older CSS15G/30G or DSS15G/30G modules.

### Upgrade Kits For Converting to Communications Mainframes

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>MAIN FRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIK4</td>
<td>4-ZONE</td>
</tr>
<tr>
<td>CIK5</td>
<td>5-ZONE</td>
</tr>
<tr>
<td>CIK7</td>
<td>7-ZONE</td>
</tr>
<tr>
<td>CIK8</td>
<td>8-ZONE</td>
</tr>
<tr>
<td>CIK11</td>
<td>11-ZONE</td>
</tr>
<tr>
<td>CIK12</td>
<td>12-ZONE</td>
</tr>
<tr>
<td>CIK16</td>
<td>16-ZONE</td>
</tr>
<tr>
<td>CIK20</td>
<td>20-ZONE</td>
</tr>
<tr>
<td>CIK24</td>
<td>24-ZONE</td>
</tr>
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<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>MAIN FRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIK28</td>
<td>28-ZONE</td>
</tr>
<tr>
<td>CIK32</td>
<td>32-ZONE</td>
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<tr>
<td>CIK36</td>
<td>36-ZONE</td>
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<tr>
<td>CIK40</td>
<td>40-ZONE</td>
</tr>
<tr>
<td>CIK44</td>
<td>44-ZONE</td>
</tr>
<tr>
<td>CIK48</td>
<td>48-ZONE</td>
</tr>
<tr>
<td>CIK2HP</td>
<td>2-ZONE HIGH POWER</td>
</tr>
<tr>
<td>CIK3HP</td>
<td>3-ZONE HIGH POWER</td>
</tr>
<tr>
<td>CIK5HP</td>
<td>5-ZONE HIGH POWER</td>
</tr>
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</table>
### Connectors / Connector Kits (5-48 Zone, 15 Amp; 2-5 Zone, 30 Amp)

<table>
<thead>
<tr>
<th>Reference Letter</th>
<th>Description</th>
<th>Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Mold Thermocouple Output Connector</td>
<td>see page 132</td>
</tr>
<tr>
<td>B</td>
<td>Mold Power Input Connector</td>
<td>see page 131</td>
</tr>
<tr>
<td>C</td>
<td>Mold End Kit for 5-Zone Thermocouple Cable (10, 15 or 30 AMP)</td>
<td>CKTF15G</td>
</tr>
<tr>
<td></td>
<td>Mold End Kit for 8-Zone Thermocouple Cable (10, 15 or 30 AMP)</td>
<td>CKTF18G</td>
</tr>
<tr>
<td></td>
<td>Mold End Kit for 12-Zone Thermocouple Cable (10, 15 or 30 AMP)</td>
<td>CKTF112G</td>
</tr>
<tr>
<td>D</td>
<td>Mold End Kit for all 10 or 15 AMP Power Cables</td>
<td>CKPF112BG</td>
</tr>
<tr>
<td></td>
<td>Mold End Kit for all 2 or 3-Zone 30 AMP Power Cables</td>
<td>CKPF13CG</td>
</tr>
<tr>
<td></td>
<td>Mold End Kit for all 5-Zone 30 AMP Power Cables</td>
<td>CKPF15CG</td>
</tr>
<tr>
<td>E</td>
<td>Frame End Kit for all Thermocouple Cables (10, 15 or 30 AMP)</td>
<td>CKTF112AG</td>
</tr>
<tr>
<td>F</td>
<td>Frame End Kit for all 10 or 15 AMP Power Cables</td>
<td>CKPM112BG</td>
</tr>
<tr>
<td></td>
<td>Frame End Kit for 2 or 3-Zone 30 AMP Power Cables</td>
<td>CKPM13CG</td>
</tr>
<tr>
<td></td>
<td>Frame End Kit for all 5-Zone 30 AMP Power Cables</td>
<td>CKPM15CG</td>
</tr>
<tr>
<td>G</td>
<td>Thermocouple Input Kit for all Mainframes (10, 15 or 30 AMP)</td>
<td>CKTM212AG</td>
</tr>
<tr>
<td>H</td>
<td>Power Output Kit for all 10 or 15 AMP Power Cables</td>
<td>CKPF212BG</td>
</tr>
<tr>
<td></td>
<td>Power Output Kit for all 2 or 3-Zone 30 AMP Power Cables</td>
<td>CKPF32CG</td>
</tr>
<tr>
<td></td>
<td>Power Output Kit for all 5-Zone 30 AMP Power Cables</td>
<td>CKPF25CG</td>
</tr>
<tr>
<td>I</td>
<td>Edge Card Connector Kit for all Mainframe PC Boards (10, 15 or 30 AMP)</td>
<td>CKF312G</td>
</tr>
</tbody>
</table>

**NOTE:** For upper inside communications connectors, see previous page.
Mainframe, Cable Components, and Service Tools*

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBD10M</td>
<td>10 AMP 2 POLE, CIRCUIT BREAKER USED IN MFP1G AND MFP1G1</td>
</tr>
<tr>
<td>CBD20M</td>
<td>20 AMP 2 POLE, CIRCUIT BREAKER USED IN MFR2G</td>
</tr>
<tr>
<td>CBD30M</td>
<td>30 AMP 2 POLE, CIRCUIT BREAKER USED IN MFPR2G AND MFHP1G</td>
</tr>
<tr>
<td>CBD50</td>
<td>50 AMP 3 POLE, CIRCUIT BREAKER USED IN 5 THROUGH 12 ZONE MAINFRAMES</td>
</tr>
<tr>
<td>CBD70</td>
<td>70 AMP 3 POLE, CIRCUIT BREAKER USED IN 16 THROUGH 48 ZONE &amp; HIGH POWER MAINFRAMES</td>
</tr>
<tr>
<td>PIN0114</td>
<td>14 GAUGE MALE PIN FOR “B” &amp; “F” POWER CONNECTORS (PACKAGE OF 30)</td>
</tr>
<tr>
<td>PIN0214</td>
<td>14 GAUGE FEMALE SOCKET FOR “D” &amp; “H” POWER CONNECTORS (PACKAGE OF 30)</td>
</tr>
<tr>
<td>PIN0120</td>
<td>20 GAUGE MALE PIN FOR “G” THERMOCOUPLE CONNECTOR (PACKAGE OF 30)</td>
</tr>
<tr>
<td>PIN0220</td>
<td>20 GAUGE FEMALE PIN FOR “E” THERMOCOUPLE CONNECTOR (PACKAGE OF 30)</td>
</tr>
<tr>
<td>WHT1919</td>
<td>CRIMP TOOL FOR ALL PIN-xxxx LISTED ABOVE</td>
</tr>
<tr>
<td>RPM0048</td>
<td>EXTRACTION TOOL FOR ALL PIN-TYPE CONNECTOR PINS</td>
</tr>
<tr>
<td>RPM0038</td>
<td>NEON INDICATORS USED ON 240 VAC MAINFRAME CIRCUIT BREAKER PANELS</td>
</tr>
<tr>
<td>RPM0044</td>
<td>CARD GUIDES FOR ALL MAINFRAMES</td>
</tr>
<tr>
<td>RPM0046</td>
<td>PINS FOR WHITE EDGE CARD CONNECTORS “I” (PACKAGE OF 20)</td>
</tr>
<tr>
<td>RPM0059</td>
<td>PANEL MOUNT BASE &amp; LATCH FOR 5-ZONE THERMOCOUPLE MOLD CONNECTION “A”</td>
</tr>
<tr>
<td>RPM0060</td>
<td>PANEL MOUNT BASE &amp; LATCH FOR 8-ZONE THERMOCOUPLE MOLD CONNECTION “A”</td>
</tr>
<tr>
<td>RPM0061</td>
<td>PANEL MOUNT BASE &amp; LATCH FOR 12-ZONE THERMOCOUPLE MOLD CONNECTION “A”</td>
</tr>
<tr>
<td>RPM0062</td>
<td>MALE INSERT FOR 5 ZONE THERMOCOUPLE MOLD CONNECTION “A”</td>
</tr>
<tr>
<td>RPM0063</td>
<td>MALE INSERT FOR 8-ZONE THERMOCOUPLE MOLD CONNECTION “A”</td>
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<tr>
<td>RPM0064</td>
<td>MALE INSERT FOR 12-ZONE THERMOCOUPLE MOLD CONNECTION “A”</td>
</tr>
<tr>
<td>RPM0065</td>
<td>FEMALE INSERT FOR 5-ZONE THERMOCOUPLE CABLE CONNECTOR “C”</td>
</tr>
<tr>
<td>RPM0066</td>
<td>FEMALE INSERT FOR 8-ZONE THERMOCOUPLE CABLE CONNECTOR “C”</td>
</tr>
<tr>
<td>RPM0067</td>
<td>FEMALE INSERT FOR 12-ZONE THERMOCOUPLE CABLE CONNECTOR “C”</td>
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<tr>
<td>RPM0068</td>
<td>HOOD FOR 5 ZONE THERMOCOUPLE CABLE CONNECTOR “C”</td>
</tr>
<tr>
<td>RPM0069</td>
<td>HOOD FOR 8 ZONE THERMOCOUPLE CABLE CONNECTOR “C”</td>
</tr>
<tr>
<td>RPM0070</td>
<td>HOOD FOR 12 ZONE THERMOCOUPLE CABLE CONNECTOR “C”</td>
</tr>
<tr>
<td>RPM0071</td>
<td>HOOD FOR 5, 8 &amp; 12 POWER &amp; THERMOCOUPLE CABLE CONNECTIONS “D”, “E” &amp; “F”</td>
</tr>
<tr>
<td>RPM0072</td>
<td>MALE INSERT FOR “B”, “F” &amp; “G” (15 AMP CONNECTOR RATING IS EXCLUSIVE TO DME)</td>
</tr>
<tr>
<td>RPM0073</td>
<td>FEMALE INSERT FOR “D”, “E” &amp; “H” (15 AMP CONNECTOR RATING IS EXCLUSIVE TO DME)</td>
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</table>

* (Reference page 134-147 for Letter Designations)

All Smart Series Modules

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC1</td>
<td>1 AMP 250 VAC FUSE</td>
</tr>
<tr>
<td>ABC3</td>
<td>3 AMP 250 VAC FUSE - NOTE: THESE LOWER POWER FUSES ARE RECOMMENDED FOR NOZZLES</td>
</tr>
<tr>
<td>ABC5</td>
<td>5 AMP 250 VAC FUSE - NOTE: THESE LOWER POWER FUSES ARE RECOMMENDED FOR NOZZLES</td>
</tr>
<tr>
<td>ABC10</td>
<td>10 AMP 250 VAC FUSE - NOTE: REQUIRED FOR 15 AMP MODULES USED IN 10 AMP FRAMES</td>
</tr>
<tr>
<td>ABC15</td>
<td>15 AMP 250 VAC FUSE</td>
</tr>
<tr>
<td>RPM0123</td>
<td>15 AMP 250 VAC FUSE - ULTRAFAST</td>
</tr>
<tr>
<td>RPM0124</td>
<td>.062 AMP TC FUSE FOR TSM MODULES ONLY</td>
</tr>
<tr>
<td>NYL0001</td>
<td>“NYLATCH” MODULE RETENTION PLUNGER AND GROMMET (10/PKG) - NOTE: AT THE BOTTOM OF EACH MODULE</td>
</tr>
<tr>
<td>RPM0008</td>
<td>POWER ROCKER SWITCH FOR ALL MODULES EXCEPT DSS AND CSS1524</td>
</tr>
<tr>
<td>RPM0009</td>
<td>TRANSFORMER TYPE DST416 FOR ALL MODULES EXCEPT DSS &amp; TAS</td>
</tr>
<tr>
<td>RPM0027</td>
<td>ALUMINUM HANDLE FOR 15 AMP MODULES</td>
</tr>
<tr>
<td>RPM0039</td>
<td>30 AMP 2 POLE, CIRCUIT BREAKER FOR MODULES</td>
</tr>
<tr>
<td>RPM0023</td>
<td>TRIAC - TYPE Q8040P 40 AMP 600 VOLT FOR USE ON ALL MODULES</td>
</tr>
<tr>
<td>RPM0054</td>
<td>TRIAC - TYPE BTA40800E 40 AMP 800 VOLT FOR USE ON ALL MODULES EXCEPT CSS</td>
</tr>
<tr>
<td>RPM0050</td>
<td>2200 OHM FLAME PROOF FUSIBLE LINK RESISTOR USED IN THERMOCOUPLE CIRCUIT (10/PK) USED ON ALL MODULES</td>
</tr>
<tr>
<td>RPM0088</td>
<td>A/D CONVERTER FOR SSM15G, SSM15G1, SSM30G, SSH1001, SSH-1002 AND ALL CSS MODULES</td>
</tr>
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</table>
## CSS15G, CSS30G, CSS1502, CSS3002

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>CSS0001</td>
<td>MICROPROCESSOR FOR CSS15G</td>
</tr>
<tr>
<td>CSS0002</td>
<td>MICROPROCESSOR FOR CSS1502</td>
</tr>
<tr>
<td>RPM0011</td>
<td>TRIAC DRIVER U14</td>
</tr>
<tr>
<td>RPM0012</td>
<td>OPTOCOUPLER U9 &amp; U11</td>
</tr>
<tr>
<td>RPM0013</td>
<td>OPERATIONAL AMPLIFIER U8 &amp; U13</td>
</tr>
<tr>
<td>RPM0014</td>
<td>OPERATIONAL AMPLIFIER U3</td>
</tr>
</tbody>
</table>

## DSS15G, DSS30G, DSS1502, DSS3002

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
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<tbody>
<tr>
<td>DSS0001</td>
<td>MICROPROCESSOR FOR DSS15G, DSS15G1 &amp; DSS30G</td>
</tr>
<tr>
<td>DSS0002</td>
<td>MICROPROCESSOR FOR DSS1501, DSS1502 &amp; DSS3002</td>
</tr>
<tr>
<td>RPM0020</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>RPM0022</td>
<td>TRIAC DRIVER Q1</td>
</tr>
<tr>
<td>RPM0024</td>
<td>POWER ROCKER SWITCH</td>
</tr>
<tr>
<td>RPM0086</td>
<td>315 MA TIME LAG FUSE F3 (USED IN DSS1501, 1502, &amp; 3002 MODULES ONLY); CHECK YOUR MODULE!</td>
</tr>
<tr>
<td>RPM0089</td>
<td>200 MA TIME LAG FUSE F3 (USED IN DSS1501, 1502, &amp; 3002 MODULES ONLY); CHECK YOUR MODULE!</td>
</tr>
</tbody>
</table>

## SSM15G, SSM30G, SSH1002, ESH1012

<table>
<thead>
<tr>
<th>Part</th>
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</thead>
<tbody>
<tr>
<td>RPM0010</td>
<td>TRIAC DRIVER U5</td>
</tr>
<tr>
<td>RPM0012</td>
<td>OPTOCOUPLER U6 &amp; U7</td>
</tr>
<tr>
<td>RPM0013</td>
<td>OPERATIONAL AMPLIFIER U2</td>
</tr>
<tr>
<td>RPM0014</td>
<td>OPERATIONAL AMPLIFIER U8</td>
</tr>
<tr>
<td>RPM0015</td>
<td>SETPOINT POTENTIOMETER (FRONT PANEL)</td>
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## SSM1501, SSM1502, SSM3002, SSH1011, SSH1012, ESH1012

<table>
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<th>Description</th>
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</thead>
<tbody>
<tr>
<td>SSM0002</td>
<td>MICROPROCESSOR</td>
</tr>
<tr>
<td>RPM0010</td>
<td>TRIAC DRIVER U5</td>
</tr>
<tr>
<td>RPM0014</td>
<td>OPERATIONAL AMPLIFIER U3 &amp; U8</td>
</tr>
<tr>
<td>RPM0053</td>
<td>PUSHWHEEL ASSEMBLY, WITH CABLE</td>
</tr>
<tr>
<td>RPM0055</td>
<td>AUTO/MANUAL/AUTO% SWITCH FOR FRONT PANEL (SSM ONLY) (FRONT PANEL)</td>
</tr>
<tr>
<td>RPM0056</td>
<td>AUTO/MANUAL/AUTO% SWITCH FOR FRONT PANEL (SSH &amp; ESH) (FRONT PANEL)</td>
</tr>
<tr>
<td>RPM0087</td>
<td>250 MA TIME LAG FUSE F3, CHECK YOUR MODULE!</td>
</tr>
<tr>
<td>RPM0090</td>
<td>160 MA TIME LAG FUSE F3, CHECK YOUR MODULE!</td>
</tr>
</tbody>
</table>

## TAS0501, TAS0502, TAS0511, TAS0512

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>RPM0025</td>
<td>BEEPER</td>
</tr>
<tr>
<td>RPM0026</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>RPM0028</td>
<td>SWITCH STANDBY HEAT (TAS0501, TAS0502, ONLY) &amp; ALARM (ALL UNITS) (FRONT PANEL)</td>
</tr>
<tr>
<td>RPM0057</td>
<td>ROTARY SWITCH FOR OFF, STANDBY HEAT, NORMAL, BOOST (TAS0511, TAS0512, ONLY)</td>
</tr>
<tr>
<td>RPM0058</td>
<td>KNOB FOR RPM0057</td>
</tr>
<tr>
<td>RPM0029</td>
<td>RECEPTACLE CONNECTOR FOR FRONT PANEL</td>
</tr>
<tr>
<td>RPM0030</td>
<td>MATING CONNECTOR (PLUG) FOR RPM0029</td>
</tr>
<tr>
<td>RPM0031</td>
<td>PINS FOR RPM0030</td>
</tr>
<tr>
<td>RPM0032</td>
<td>SOCKETS FOR RPM0029</td>
</tr>
<tr>
<td>RPM0033</td>
<td>RELAY #1 - ALARM OUTPUT CONNECTOR</td>
</tr>
<tr>
<td>RPM0034</td>
<td>RELAY #2 - BEEPER CONTACTS</td>
</tr>
</tbody>
</table>
The diagrams on pages 148 through 150 are printed on the back panels of the mainframes. For your convenience, they are depicted here along with additional information.

For information on input wiring for 30 AMP mainframes, contact DME.

Standard input wiring for mainframes, unless specified otherwise at time of order, is 240 VAC, three-phase, 4-wire, 50/60 Hz. (OPTION A). If it becomes necessary to change to another configuration, refer to the appropriate diagram and information on the following pages:

Page 148: (OPTION A) 208-240 VAC, 3-phase, 4-wire
Page 149: (OPTION B) 380-415 VAC, 3-phase, 5-wire
Page 150: (OPTION C) 240 VAC, 2-phase, 4-wire
(OPTION D) 208-240 VAC, single phase, 3-wire

NOTE: For mold power and thermocouple connector wiring information, see pages 128-129.

**OPTION A**

(Standard) 208 – 240 VAC, Three-Phase, 4-Wire Delta or “Y” Power Distribution System

As shown above, each module is powered from one of the three phases. Zone (1), for example, is powered from Phase 1, which is supplied by R/L1 and S/L2. Zone (2) is powered by Phase 2, which is supplied by S/L2 and T/L3. Zone (3) is powered by Phase 3, which is supplied by R/L1 and T/L3.

NOTE: At this point, the sequence repeats itself. For example, Zone (4) is connected the same as Zone (1) to R/L1 and S/L2 and Zone (5) is connected the same as Zone (2) to S/L2 and T/L3 and Zone (6) is connected the same as Zone (3) to R/L1 and T/L3. Zone (7) is then connected to the same phase as Zone (1) and (4), etc. This method of connection assures the greatest likelihood of line balance.
CAUTION NOTE: The voltages from line-to-line in this system are 380 to 415 volts. Severe damage to module and mainframe could result if this type of AC input system is connected to a mainframe wired as OPTION A. This type of power distribution is not found or is very uncommon in the United States but is the most common system found in many other countries worldwide.

WARNING: If export of this system is intended, make sure that wiring is reconfigured for the country where it is to be used.

Please note that the 380-415 Volt Power Distribution System is the same as the “Y” connection shown in OPTION A except for the voltage levels and the use of the MP/N to develop the 240 volt from the 380-415 volt system. Notice that all modules have one line connected to MP/N and the other side connected to one of the three phase lines.

Example: Zone (1) is connected to Phase 1, which is supplied by R/L1 and MP/N.
Zone (2) is connected to Phase 2, which is supplied by S/L2 and MP/N.
Zone (3) is connected to Phase 3, which is supplied by T/L3 and MP/N.
Zone (4) starts the sequence over again. It is connected to Phase 1 R/L1 and MP/N, etc.
### Smart Series®

**Input Power Wiring Diagrams (Options C and D)**

**Example:** Zone (1) is connected to MP/N and R/L1. Zone (2) is connected to MP/N and S/L2, etc. Zone (3) starts the sequence over again. It is connected to MP/N and R/L2, same as zone (1).

#### OPTION C

**240 VAC, Two-Phase, 4-Wire**

The 240 volt single-phase connection only uses two power lines plus ground.

**CAUTION:** Only power conductors should be connected through the circuit breaker. Never make ground connections through a circuit breaker. Notice that the output of the circuit breaker is connected to terminal strips R/L1 and S/L2. Also notice that ground is common with MP/N in this system. All zones in this system have to be connected to MP/N and either R/L1 or S/L2. Line balance is achieved by alternating between R/L1 and S/L2.

#### OPTION D

**208 – 240 VAC, Single-Phase, 3-Wire or 120 VAC, Two-Phase, 4-Wire**

Above diagram depicts two different wiring configurations. One is 208-240 volt, single-phase, 3-wire. Note that lines R/L1 and S/L2 are connected through the circuit breaker to the appropriate terminal strips. All zones will be connected between R/L1 and S/L2. MP/N is common with ground and is not connected through the circuit breaker.

In the 120 volt connection (zone connections shown within the dashed-line area), the 120 volts is developed between R/L1 and MP/N and S/L2 and MP/N. Again, ground and MP/N are not connected through the circuit breaker. Each zone in this system will be connected to MP/N and either R/L1 or S/L2. Line balance is achieved by alternating between R/L1 and S/L2.
Combination Mold Power and Thermocouple Conversion Cables allow ease of conversion between Mold-Masters and DME systems

- Mold Power and Thermocouple combined in a single cable
- Conversion for 12 zones
- Cables available in standard lengths of 10’ and 20’ (custom lengths are available)

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Mold Power Zones</th>
<th>Thermocouple Zones</th>
<th>Cable Length</th>
<th>Mainframe Connector</th>
<th>Mold Connector</th>
<th>Splits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PITC1210YFE</td>
<td>12</td>
<td>12</td>
<td>10’</td>
<td>DME “G” Series</td>
<td>HBE48 (Mold Master MPlug.12)</td>
<td>5 (Frame End)</td>
</tr>
<tr>
<td>PITC1220YFE</td>
<td>20</td>
<td></td>
<td>20’</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PITC1210YME</td>
<td>12</td>
<td>12</td>
<td>10’</td>
<td>HBE48 (Mold Master MPlug.12)</td>
<td>DME “G” Series</td>
<td>5 (Mold End)</td>
</tr>
<tr>
<td>PITC1220YME</td>
<td>20</td>
<td></td>
<td>20’</td>
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</tr>
</tbody>
</table>

Works with the following connectors:

- PIC12G
- MTC12G
- MPlug.12
Husky is a trademark of Husky Injection Molding Systems.
Smart Series® Alternate Connectors

Alternate Cable Configuration

Typical Mold Connector Wiring Diagram (Revision "A")

Before Power Is Connected:
- Use Ohm meter to check each heater power lead. Resistance to ground should be greater than 20,000 ohms.
- Check resistance between heater power leads. (See calculation below)
- Measure between each heater power lead and each thermocouple lead. Resistance should be greater than 20,000 ohms.

Before Power Is Connected:
- Check connections of back and white leads to insure proper connection to the connect terminal.
- Use Ohm meter to measure between black and white leads. Resistance should be low.

Heater Volts Marked on Heaters

X

Heater Watts Marked on Heaters

= Measured Resistance Ohms

Example: (240 Volts) × (240 Volts) ÷ 820 Watts = 70 Ohms

Note: All grounds must be connected to mold to insure operator safety.
Callout Number 1 is special order with a short lead time; all other items are in stock.

<table>
<thead>
<tr>
<th>Callout Number</th>
<th>Item Number 1</th>
<th>Item Number 2</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PTO5TB</td>
<td>PIC05</td>
<td>A: 1.5&quot; 38mm</td>
</tr>
<tr>
<td>1</td>
<td>PTO8TB</td>
<td>PIC08</td>
<td>A: 1.5&quot; 38mm</td>
</tr>
<tr>
<td>1</td>
<td>PTO12TB</td>
<td>PIC012</td>
<td>A: 1.5&quot; 38mm</td>
</tr>
<tr>
<td>1</td>
<td>MTC05</td>
<td>PIC05</td>
<td>A: 1.5&quot; 38mm</td>
</tr>
<tr>
<td>1</td>
<td>MTC08</td>
<td>PIC08</td>
<td>A: 1.5&quot; 38mm</td>
</tr>
<tr>
<td>1</td>
<td>MTC012</td>
<td>PIC012</td>
<td>A: 1.5&quot; 38mm</td>
</tr>
</tbody>
</table>

**Note:** Allow an additional 0.25" (10mm) in height and width for screw head clearance.
FSCB0001 CABLE BASKET
(Includes (1) 14”- and (4) 6”- long zip ties)

- Compatible with DME Smart Series
- Durable molded plastic construction
- Keep all your cables and connectors safely off the floor

Note: Product color may differ from what is shown.

INSTALLATION GUIDE

Step 1
Position Basket on bottom of the DME Mainframe Floor Stand.
Decide if you will attach the basket to the right or left Mainframe Upright Post.

Step 2
Secure Basket to Mainframe Floor Stand with Supplied Cable Ties.

Attach Longer Cable Tie to Side Post

Attach Shorter Cable Ties to Corners
Valve Gate Controls

ENERGY EFFICIENT, RELIABLE AND COMPACT HYDRAULIC AND PNEUMATIC CONTROLS
DME Pneumatic Sequential Valve Gate Controller

The SVG controller provides the user with full control over valve gate flow sequence, critical when molding complex or large parts. All SVG controllers feature the **NEW** APS (Adaptive Process System) technology providing faster processing and response speed.

**BENEFITS**
- The sequential valve gate technology is integrated in a precise valve gate control unit with all available features or stand alone unit
- SVGP systems are air cooled & energy efficient
- Designed to easily connect to any valve gate system
- Precise filling control with performance graphs displaying time and position, with up to 4 steps per cycle
- (2) digital and analog triggers for 2-shot applications

**CONFIGURATION**
- Program valve actuation by time or injection screw position
- Pin position feedback for gate open /close confirmation
- Automatic and manual mode for individual gate control
- Absolute and incremental timer selections
- Single or dual acting solenoid valves for gate activation, valve banks re-locatable
- Calibrate analog signals for position, pressure and volumetric settings
- Reconfigure pin position feedback inputs for 12 additional sequences
- 500 or 1000 Watt 24VDC power supply - Standard 220V single phase (185-245V range) or Optional 480V three phase

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
<th>INCLUDES</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVGP2</td>
<td>2 ZONE PNEUMATIC</td>
<td>SVG12 HMI, 1-2 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGP4</td>
<td>4 ZONE PNEUMATIC</td>
<td>SVG12 HMI, 1-4 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGP6</td>
<td>6 ZONE PNEUMATIC</td>
<td>SVG12 HMI, 1-6 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGP8</td>
<td>8 ZONE PNEUMATIC</td>
<td>SVG12 HMI, 1-8 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGP12</td>
<td>12 ZONE PNEUMATIC</td>
<td>SVG12 HMI, 2-6 SOLENOID VALVE BANKS</td>
</tr>
<tr>
<td>SVGPC2</td>
<td>2 ZONE COMPACT PNEUMATIC</td>
<td>SVG12C HMI, 1-2 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGPC4</td>
<td>4 ZONE COMPACT PNEUMATIC</td>
<td>SVG12C HMI, 1-4 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGPC6</td>
<td>6 ZONE COMPACT PNEUMATIC</td>
<td>SVG12C HMI, 1-6 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGPC8</td>
<td>8 ZONE COMPACT PNEUMATIC</td>
<td>SVG12C HMI, 1-8 SOLENOID VALVE BANK</td>
</tr>
<tr>
<td>SVGPC12</td>
<td>12 ZONE COMPACT PNEUMATIC</td>
<td>SVG12C HMI, 2-6 SOLENOID VALVE BANKS</td>
</tr>
</tbody>
</table>

If you do not see the number of controlled zones required in the table above please contact us.

Optional Accessories

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITSTOPROLLEY</td>
<td>STAND</td>
</tr>
<tr>
<td>PNEUPP</td>
<td>PNEUMATIC POWER PACK 500 PSI</td>
</tr>
</tbody>
</table>

SVGP

SVGPC

Pneumatic Power pack

U.S. 800-626-6653 • Canada 800-387-6600 • dme@milacron.com • www.dme.net
DME Pneumatic Sequential Valve Gate Controller

KEY TECHNICAL FEATURES AT A GLANCE
• Digital outputs – fused at 2 amps
• Digital inputs - pin position back/forward
• Integrated 24 VDC power supply to drive valve gate solenoids
• 7” color touch screen on standalone controller
• Controls single or dual coil solenoid valves
• Real time valve status graph
• Configurable Easy View status page
• NEW SVG Power pack combines hot runner control, SVG, hydraulic power pack and solenoid valve bank all in one package

PROGRAMMABLE TRIGGERS & ALARMS
• Digital input – sequence start trigger
• Digital input triggers – programmable sequence triggers
• (2) Analog inputs 0-10 volts
• Analog input 4-20ma
• Remote enable signal – from IMM
• Fault relay output (dry contact) – to IMM
• Dry contact or 24VDC input triggering

Controller includes 15ft (4.8m) solenoid power cord

U.S. 800-626-6653  •  Canada 800-387-6600  •  dme@milacron.com  •  www.dme.net
DME Hydraulic Sequential Valve Gate Controller

The SVG controller provides the user with full control over valve gate flow sequence, critical when molding complex or large parts. All SVG controllers feature the NEW APS (Adaptive Process System) technology providing faster processing and response speed.

**BENEFITS**
- The sequential valve gate technology is integrated in a precise valve gate control unit with all available features or stand alone unit
- SVGH6 systems - air cooled & energy efficient
- SVGH1200 & 1600 systems - built-in water cooling circuit for the hydraulic power pack
- Designed to easily connect to any valve gate system
- Precise filling control with performance graphs displaying time and position, with up to 4 steps per cycle
- (2) digital and analog triggers for 2-shot applications

**CONFIGURATION**
- Program valve actuation by time or injection screw position
- Pin position feedback for gate open/close confirmation
- Automatic and manual mode for individual gate control
- Absolute and incremental timer selections
- Single or dual acting solenoid valves for gate activation, valve banks relocatable
- Calibrate analog signals for position, pressure and volumetric settings
- Configure up to 4 cards to control as many as 48 single acting valve gates
- Reconfigure pin position feedback inputs for 12 additional sequences
- 500 or 1000 Watt 24VDC power supply - Standard 220V single phase (185-245V range) or Optional 480V three phase
- Available as standalone controller or semi-integrated into the TSP or TSP Plus temperature controller

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
<th>POWER PACK PSI</th>
<th>CONSISTS OF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SVGH62</td>
<td>2 ZONE HYDRAULIC</td>
<td>3L-600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-2 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH64</td>
<td>4 ZONE HYDRAULIC</td>
<td>3L-600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-4 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH66</td>
<td>6 ZONE HYDRAULIC</td>
<td>3L-600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-6 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH68</td>
<td>8 ZONE HYDRAULIC</td>
<td>3L-600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-8 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH122</td>
<td>2 ZONE HYDRAULIC</td>
<td>3L-1200 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-2 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH124</td>
<td>4 ZONE HYDRAULIC</td>
<td>3L-1200 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-4 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH126</td>
<td>6 ZONE HYDRAULIC</td>
<td>3L-1200 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-6 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH128</td>
<td>8 ZONE HYDRAULIC</td>
<td>3L-1200 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-8 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH1212</td>
<td>12 ZONE HYDRAULIC</td>
<td>3L-1200 PSI</td>
<td>SVG12 HMI, POWER PACK, 2-6 SOLENOID VALVE BANKS, STAND</td>
</tr>
<tr>
<td>SVGH162</td>
<td>2 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-2 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH164</td>
<td>4 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-4 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH166</td>
<td>6 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-6 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH168</td>
<td>8 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG12 HMI, POWER PACK, 1-8 SOLENOID VALVE BANK, STAND</td>
</tr>
<tr>
<td>SVGH1612</td>
<td>12 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG12 HMI, POWER PACK, 2-6 SOLENOID VALVE BANKS, STAND</td>
</tr>
<tr>
<td>SVGH1616</td>
<td>16 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG24 HMI, POWER PACK, 2-8 SOLENOID VALVE BANKS, STAND</td>
</tr>
<tr>
<td>SVGH1624</td>
<td>24 ZONE HYDRAULIC</td>
<td>3L-1600 PSI</td>
<td>SVG24 HMI, POWER PACK, 3-8 SOLENOID VALVE BANKS, STAND</td>
</tr>
</tbody>
</table>

If you do not see the number of controlled zones required in the table above please contact us.
DME Sequential Valve Gate Controller

KEY TECHNICAL FEATURES AT A GLANCE

- Digital outputs – fused at 2 amps
- Digital inputs - pin position back/forward
- Integrated 24 VDC power supply to drive valve gate solenoids
- 7” color touch screen on standalone controller
- Controls single or dual coil solenoid valves
- Real time valve status graph
- Configurable Easy View status page
- **NEW** SVG Power pack combines hot runner control, SVG, hydraulic power pack and solenoid valve bank all in one package

PROGRAMMABLE TRIGGERS & ALARMS

- Digital input – sequence start trigger
- Digital input triggers – programmable sequence triggers
- (2) Analog inputs 0-10 volts
- Analog input 4-20ma
- Remote enable signal – from IMM
- Fault relay output (dry contact) – to IMM
- Dry contact or 24VDC input triggering

Controller includes 15ft (4.8m) solenoid power cord

U.S. 800-626-6653 • Canada 800-387-6600 • dme@milacron.com • www.dme.net
VCAP multi-station air valve assemblies

The VCAP series offers 4-station (0400), 6-station (0600), 8-station (0800), 10-station (1000), and 12-station (1200) valve assemblies. The single-solenoid valves are spring returned and designed to run from 24 VDC +/- 10%. The air supply (maximum rated pressure 145 PSI) can be lubricated or non-lubricated – dry air is preferred but the valve is designed to tolerate some moisture.

Quick connects are provided on all air outputs to accept standard 1/4" tubing. The de-energized outputs, used for closing valve gates, feature check valves to ensure that unused valves do not leak air.

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCAP0400</td>
<td>4-STATION AIR VALVE ASSEMBLY</td>
</tr>
<tr>
<td>VCAP0600</td>
<td>6-STATION AIR VALVE ASSEMBLY</td>
</tr>
<tr>
<td>VCAP0800</td>
<td>8-STATION AIR VALVE ASSEMBLY</td>
</tr>
<tr>
<td>VCAP1000</td>
<td>10-STATION AIR VALVE ASSEMBLY</td>
</tr>
<tr>
<td>VCAP1200</td>
<td>12-STATION AIR VALVE ASSEMBLY</td>
</tr>
</tbody>
</table>

Note: Each valve assembly includes a valve cable.

Compact 4-zone pneumatic or hydraulic control unit

The VCTB4000 Valve Gate Controller is designed to provide timer-based control of up to four 24 volt DC valves used to actuate pneumatic valve gate cylinders as well as some hydraulic valves, and features a user-friendly auto-reset feature. Its compact size makes it extremely portable and requires minimal space. A single DB025 cable connects the controller to up to four remotely located valves, minimizing wiring and air connections.

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCTB4000</td>
<td>4-ZONE PNEUMATIC HYDRAULIC CONTROLLER</td>
</tr>
<tr>
<td>VCPT0100</td>
<td>100-FT. LENGTH OF PNEUMATIC TUBING</td>
</tr>
</tbody>
</table>

Note: Trigger signal cable included with controller.

Highly accurate DME solid state timers feature resolution to 1/100 of a second, far exceeding the industry standard of 1/10 of a second.
**DME Single Zone Timer: TCM03024D**

Versatile for virtually any type of operation that requires a timer, including single-zone valve gate systems, core pulls, and air sweeps.

- Unit plugs directly into DME Smart Series Mainframes
- Test button (green light indicates power out)
- Yellow light indicates trigger signal being applied or timer in operation
- Trigger signal has two available sources – dry set of contacts or 24 VDC input
- Trigger input signal can be ganged to operate more than one timer when multiple units are used (24 VDC input only)
- Input signal and output power can be used from timer front panel connectors or DME mainframe cables
- Thermocouple cable serves as trigger signal; power cable serves as 24 VDC power supply to any 24 VDC solenoid valve

**DME Single Zone Timers (TCM03024D)** are highly accurate, solid state timers that feature resolution to 1/100 of second, far exceeding the industry standard of 1/10 of a second.

Shown next to a SSM1512 Temperature Controller in a Standard 2-Zone Smart Series Mainframe.
Customer Power Requirement Worksheet – Option A Delta 3-Phase Power 240 VAC

It is the customer’s responsibility to make sure his Hot Runner Mold Application will not exceed the power limitations of the DME Hot Runner Control System Main Circuit Breaker. Even though each slot may be rated at 15 amps, all slots CANNOT necessarily deliver full power from all zones simultaneously.

<table>
<thead>
<tr>
<th>Zone #</th>
<th>Wattage</th>
<th>Zone #</th>
<th>Wattage</th>
<th>Zone #</th>
<th>Wattage</th>
</tr>
</thead>
<tbody>
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<td>2</td>
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</table>

**TOTAL PHASE A WATTS** | **TOTAL PHASE B WATTS** | **TOTAL PHASE C WATTS**

Record Product Breaker Size Phase Wattage Not To Exceed

**Breaker Wattage Size Table – For Delta 240 VAC 3-Phase Power**

<table>
<thead>
<tr>
<th>Breaker Rating Amps</th>
<th>Maximum Phase Watts Each Phase A,B,C Cannot Exceed This Value</th>
<th>Maximum Phase Amps Each Phase A,B,C Cannot Exceed This Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 AMP</td>
<td>1,386 WATTS</td>
<td>5.77 AMPS</td>
</tr>
<tr>
<td>20 AMP</td>
<td>2,771 WATTS</td>
<td>11.55 AMPS</td>
</tr>
<tr>
<td>30 AMP</td>
<td>4,157 WATTS</td>
<td>17.32 AMPS</td>
</tr>
<tr>
<td>40 AMP</td>
<td>5,542 WATTS</td>
<td>23.09 AMPS</td>
</tr>
<tr>
<td>50 AMP</td>
<td>6,928 WATTS</td>
<td>28.87 AMPS</td>
</tr>
<tr>
<td>63 AMP</td>
<td>8,729 WATTS</td>
<td>36.27 AMPS</td>
</tr>
<tr>
<td>70 AMP</td>
<td>9,699 WATTS</td>
<td>40.41 AMPS</td>
</tr>
<tr>
<td>100 AMP</td>
<td>13,856 WATTS</td>
<td>57.74 AMPS</td>
</tr>
</tbody>
</table>

For 3 Phase Delta Power: TOTAL WATTS = SquareRoot (3) x VoltsAC x AMPS
MAXIMUM PHASE WATTS = TOTAL WATTS / 3
TECHNICAL SUPPORT: RETURNING ITEMS TO DME

Return for Repair

U.S. Customers:
TSP, TSP Plus, TSP-SVG Systems and TSM modules needing repair or calibration:
Please call 800-626-6653 for a Repair SR#. Please make sure the SR# is on the outside of the box to expedite the repair.

DME Company
29111 Stephenson Highway
Madison Heights, MI 48071
Attention Repairs

All other temperature controls needing repairs send to:
DME Repairs
1419 State Route 45 South
Austinburg, OH 44101

Canadian Customers:
DME Company
6210 Northwest Dr.
Mississauga, ONT L4V1J6
Attention Repairs

Call 800-387-6600 if you need additional help.

Please enclose contact information and a description of what problems you have been experiencing with the product. This procedure includes items still under warranty, however fuses and triacs are not covered.

Return for Credit
Call DME USA at 800-626-6653 or DME Canada at 800-387-6600 toll free