



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**



TSP Features and Benefits

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.

TSP Specifications

Specifications



CE
Certification
available

TSP™ TEMPERATURE CONTROL SYSTEM SPECIFICATIONS

User Interface	Full-color LCD touch screen on all HMI models
Display Size	5.7" QVGA
Calibration Accuracy	0.5°C / 1°F
Control Accuracy	+/- 0.5°C / 1°F
Power Response Time	8.3 ms at 60 Hz
Control Algorithm	Adaptive PID ² with auto-tuning
Degree (F or C)	Software selectable
Thermocouple	J- or K-Type, software selectable
Operating Range	0 - 472°C or 32 - 882°F
Output Voltage	Maximum 264 VAC
Supply Voltage	200/240 Delta or 380/440V 3Ø Star
Supply Breaker	40A 3-phase breaker for 6- and 12-zone control units 63A 3-phase breaker for 18- to 48-zone control units
Frequency	50 - 60 Hz automatic switching
Ambient Temperature Range	5 - 45°C (41 - 113°F)
Humidity Range	Up to 95% non-condensing
Ground Fault Detection	40mA per zone
Power Control	Phase angle or burst firing modes (time proportional, zero-crossing)
Overload Protection	Semi-conductor fuses on both heater legs
Control Modes	Closed loop (auto), open loop (manual), standby, boost mode and slave mode
Alarm Output	Closing contact relay, max. 5A, 230V
T/C and Power Connector	HAN 24e or 3
LED Indicators	Fault, Scan
Soft-Start with Auto-Tune	Unique low voltage method for heater safety
Input Protection	Plug-in nano fuses on both TC legs
Port (optional)	USB

ITEM NUMBER	SLOTS	# OF ZONES	AVAILABILITY
ITS-06-15	1	6	Special order; contact DME
ITS-12-15	2	12	In stock
ITS-18-15	3	18	Special order; contact DME
ITS-24-15	4	24	In stock
ITS-30-15	5	30	Special order; contact DME
ITS-36-15	6	36	Special order; contact DME
ITS-42-15	7	42	Special order; contact DME
ITS-48-15	8	48	In stock

TSP Component Ordering Information



Mold Power Cables (15 AMP Max)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO POWER INPUT CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
MPC12C10G	MPC12C20G	MPC12C30G	12	12 ZONE	PIC12G



Thermocouple Cables (for 15 or 30 AMP Mainframes)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO THERMOCOUPLE CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
TC12C10G	TC12C20G	TC12C30G	12	12 ZONE	MTC12G

ZONES	CONTROLLER	CABLES	TERMINAL MOUNTING BOX
12 ZONES OF CONTROL (15 AMP)	<p>ITS-12-15</p>	<p>MPC12C10G (1 each)</p> <p>TC12C10G</p>	<p>PTC12TBTS (1 each)</p>
24 ZONES OF CONTROL (15 AMP)	<p>ITS-24-15</p>	<p>MPC12C10G (2 each)</p> <p>TC12C10G</p>	<p>PTC12TBTS (2 each)</p>
48 ZONES OF CONTROL (15 AMP)	<p>ITS-48-15</p>	<p>MPC12C10G (4 each)</p> <p>TC12C10G</p>	<p>PTC12TBTS (4 each)</p>

TSP Temperature Control System | TSP Component Ordering Information

ITEM
ITSTROLLEY



Module Replacement Fuses

(sold in packs of 5)

ITEM NUMBER	DESCRIPTION	AMPS
RPM0123	POWER FUSE	15
RPM0124	TC FUSE	.062



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

ITEM NUMBER	SLOTS	# OF ZONES
ITSP-12-15	2	12
ITSP-24-15	4	24
ITSP-48-15	8	48

Custom zone configurations available upon request

ITEM NUMBER	DESCRIPTION
ITSCGR-A	PCB replacement card, 6 zones @ 15 AMP

See reverse side for accessories



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

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

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.



TSP Plus Component Ordering Information



Mold Power Cables (15 AMP Max)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO POWER INPUT CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
MPC12C10G	MPC12C20G	MPC12C30G	12	12 ZONE	PIC12G



Thermocouple Cables (for 15 or 30 AMP Mainframes)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO THERMOCOUPLE CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
TC12C10G	TC12C20G	TC12C30G	12	12 ZONE	MTC12G

ZONES	CONTROLLER	CABLES	TERMINAL MOUNTING BOX
12 ZONES OF CONTROL (15 AMP)	<p>ITSP-12-15</p>	<p>MPC12C10G (1 each)</p> <p>TC12C10G</p>	<p>PTC12TBTS (1 each)</p>
24 ZONES OF CONTROL (15 AMP)	<p>ITSP-24-15</p>	<p>MPC12C10G (2 each)</p> <p>TC12C10G</p>	<p>PTC12TBTS (2 each)</p>
48 ZONES OF CONTROL (15 AMP)	<p>ITSP-48-15</p>	<p>MPC12C10G (4 each)</p> <p>TC12C10G</p>	<p>PTC12TBTS (4 each)</p>

ITEM
ITSPTROLLEY



ITEM
ITSPALRMLT



Module Replacement Fuses

(sold in packs of 5)

ITEM NUMBER	DESCRIPTION	AMPS
RPM0123	POWER FUSE	15
RPM0124	TC FUSE	.062



RPM0124



Smart Series®

ROHS/WEEE-COMPLIANT
TEMPERATURE CONTROLS
FOR HOT RUNNER SYSTEMS



RoHS/WEEE Compliant Advanced Temperature Control 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.



CE COMPLIANT! DME Mainframes and Modules comply with Electromagnetic compatibility and low voltage directives



SSM1512



DSS1512

Control Modules

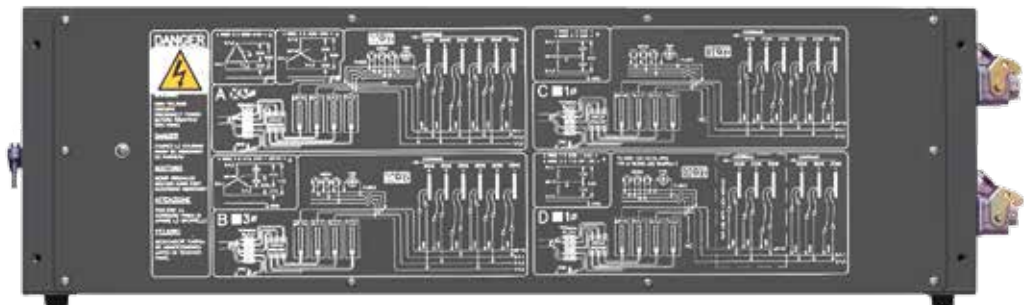
SSM (15 and 30 AMP): The SSM module provides accurate temperature control, including Smart Start® heater dry out circuitry, thermocouple fault displays and auto/manual modes of operation. The SSM features automatic or manual bumpless transfer which, in the event of a thermocouple fault, provides switch 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 $\pm 30^\circ$ 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.



SSH1022

Smart Series® Temperature Control Systems

- ① Mainframe
- ② Circuit Breaker/Disconnect
- ③ Mold Power Cable
- ④ Thermocouple Cable
- ⑤ Mold Power Input Connector
- ⑥ Insulated Crimp Connector
- ⑦ Thermocouple Connector
- ⑧ Terminal Mounting Boxes
- ⑨ Mainframe Blank Panels
- ⑩ Module Replacement Fuses
- ⑪ Control Modules

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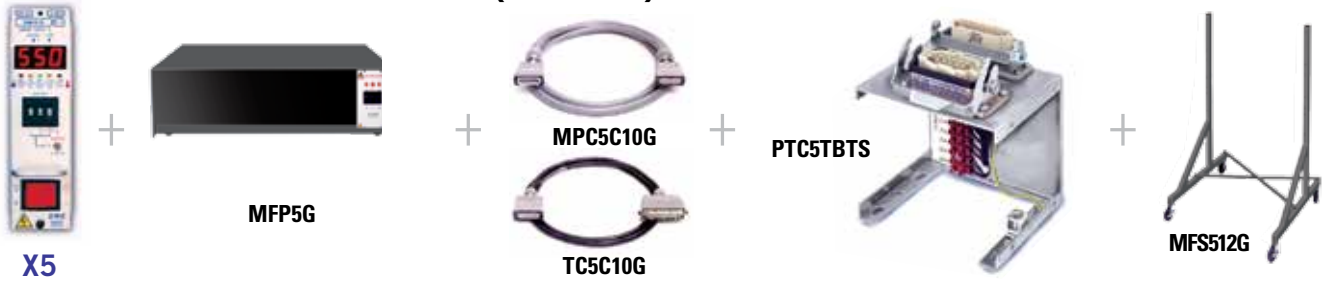
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Typical System Configurations

Smart Series® | Typical System Configurations

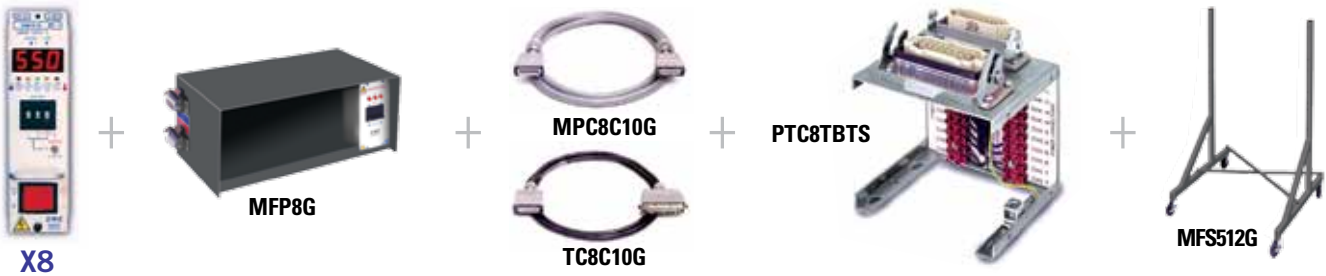
SSM1512
DSS1512

5 Zones of Control (15 AMP)



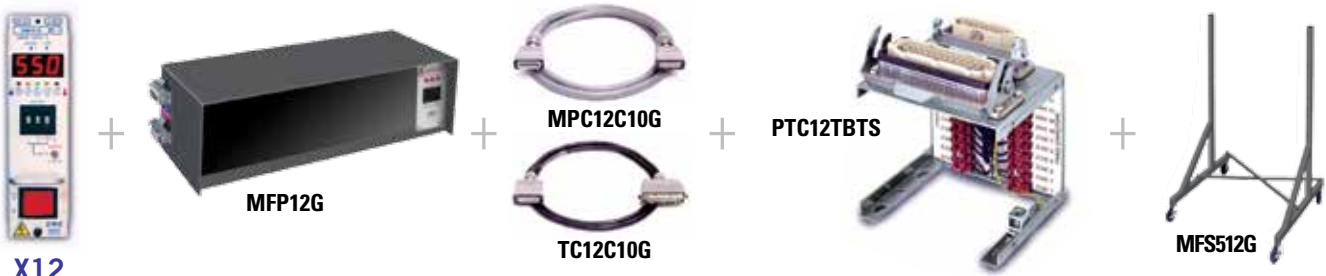
SSM1512
DSS1512

8 Zones of Control (15 AMP)



SSM1512
DSS1512

12 Zones of Control (15 AMP)



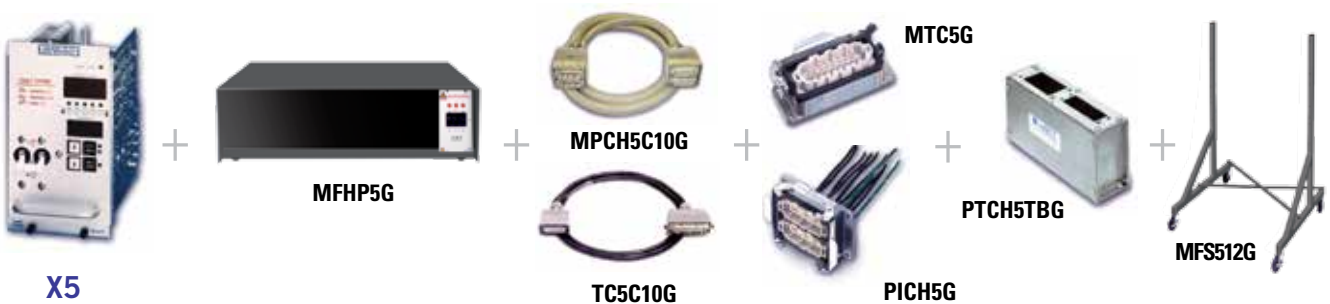
SSM3012
DSS3012

2 or 3 Zones of High Power Control (30 AMP)



SSM3012
DSS3012

5 Zones of High Power Control (30 AMP)



RoHS/WEEE Compliant Smart Series® Single Zone Temperature Controller

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

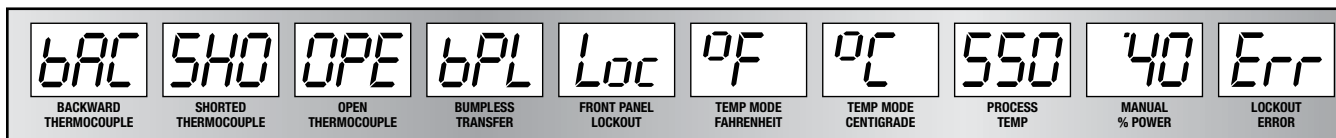
Switchable Options

- **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



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).

CONTROLLER ITEM NUMBER	VOLTS (VAC)
SSH1022	240
SSH1021	120

CABLE* ITEM NUMBER	LENGTH (FEET)
MPTC10	10
MPTC20	20

See page 119

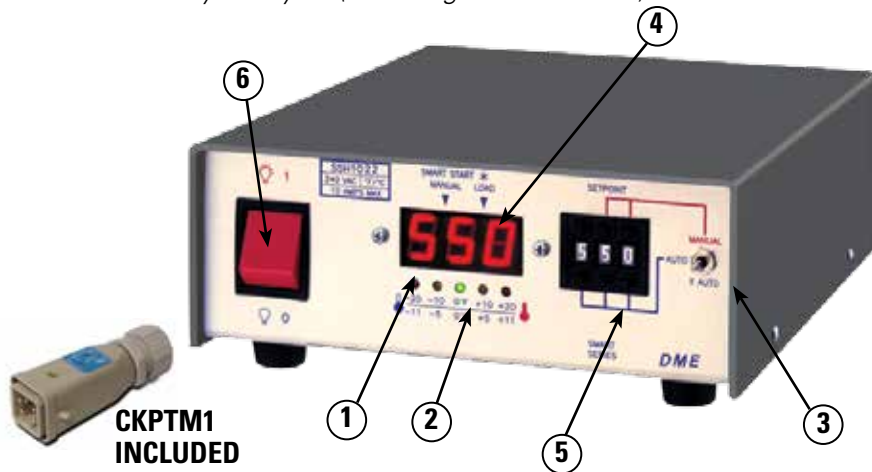


MOLD POWER AND THERMOCOUPLE CONNECTOR* ITEM NUMBER
CKPTIC1

See page 119



*** ITEMS ORDERED SEPARATELY**

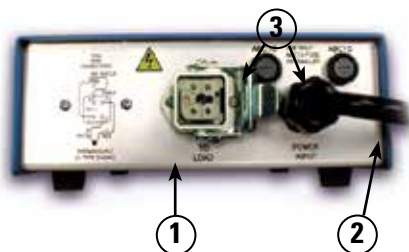


Front Panel Controls and Indicators

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

Rear Panel

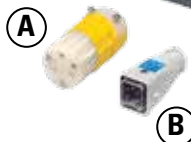
- Mold Power and Thermocouple Output Connector:**
CKPTIC1 connects to the heater and thermocouple. Mating connector CKPTM1 is supplied with controller.
- Power Input Cord:**
Nineteen foot cord supplies power to controller. Plug supplied with SSH1021 (120 VAC) units. No plug supplied with SSH1022.
- Load Fuse Receptacles:**
Provides safe and easy replacement of load fuses.



RoHS/WEEE Compliant Smart Series® Single and 2-Zone Mainframes (10 AMP max.)



MFP1G
MFP1G1



A: AC2024F (Power to Mainframe);
AC1512F supplied with MFP1G1

B: CKPTM1 (Connector to heater)

This single-zone controller is ideal for use with Straight-Shot and Gate-Mate hot sprue bushings.

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 (MFFPR2G).

*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)

ZONES	ITEM NUMBERS **	VOLTS	WATTS PER ZONE	CONNECTORS SUPPLIED
1	MFP1G1	120	1200	(1) AC1512F (POWER IN) (1) CKPTM1 (POWER-T/C OUT)
1	MFP1G	240	2400	(1) AC2024F (POWER IN) (1) CKPTM1 (POWER-T/C OUT)
2	MFFPR2G	240	2400	(1) AC2024F (POWER IN) (1) CKPTM1 (POWER-T/C OUT)

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

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



MFPR2G



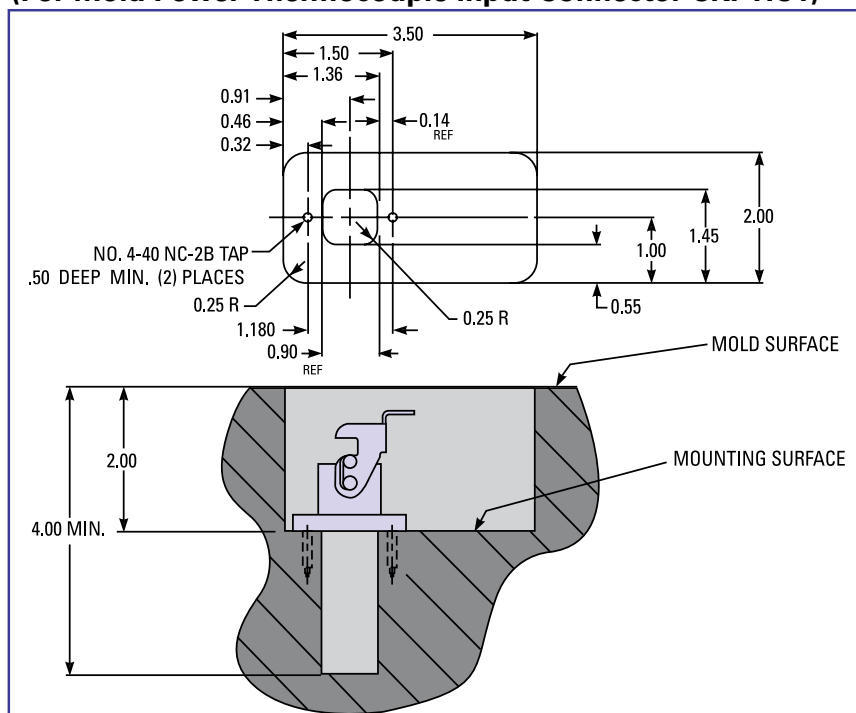
A: AC2024F (Power to Mainframe)

B: CKPTM1 (Connector to heater)

**Single zone, horizontal
10 amp controllers
(SSH1022/21) also
available. See page 116**

Recommended Mold Pocket Layout

(For Mold Power-Thermocouple Input Connector CKPTIC1)



DIMENSIONS

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

RoHS/WEEE Compliant: Smart Series® Single and 2-Zone Mainframe Accessories (10 AMP)

For Use With MFP1G, MFP1G1, MFPR2G, SSH1022 and SSH1021

ITEM NUMBER
CKPTIC1



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.

ITEM NUMBER
MPTC10
MPTC20



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 connector 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

Power Input Connectors For Mainframe



AC1512F



CKPTM1



CKPTF1



PTC210



AC2024F



CKPTM1L



CKPTF1L

ITEM NUMBER	VOLTS
AC1512F	120
AC2024F	240

ITEM NUMBER
CKPTM1
CKPTM1L

ITEM NUMBER
CKPTF1
CKPTF1L

ITEM NUMBER
PTC210

Power-Thermocouple Output Connector (for Mainframe Bulkhead)

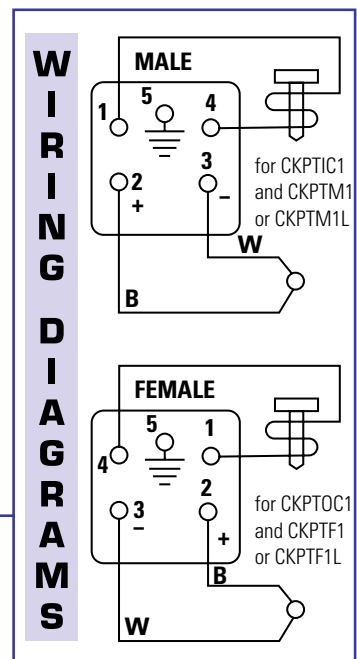
ITEM NUMBER
CKPTOC1



ITEM NUMBER
PTC210TBGTS

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

MFFPR2G



AC1240F

AC1524M

M2MJ



FRAME DIMENSIONS:

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

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)

ITEM NUMBER	WATTS PER ZONE	CONNECTORS SUPPLIED
MFFPR2G	3500	(1) AC1240F (POWER IN) (1) AC1524M (POWER OUT) (2) M2MJ (T/C IN)

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.

ITEM NUMBERS	DESCRIPTION
AC1240F*	Female 240 VAC twist-lock power input connector (mates with male frame power input)
AC1524M*	Male 240 VAC power output connector (mates with female frame power outputs)
M2MJ*	Thermocouple mini-plug (mates with frame jack strip connector)
PTC2TBGTS	2 zone, pre-wired terminal mounting box with terminal strip (mounts to mold; mates with PTC0110 or PTC0129 cables)

* Included with MFFPR2G



ITEM NUMBER
PTC0110
PTC0120

For use with MFFPR2G only

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.



ITEM NUMBER
PTC2TBGTS

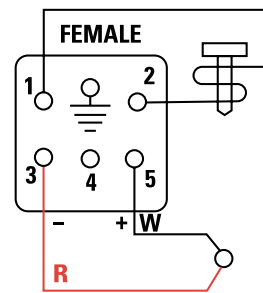
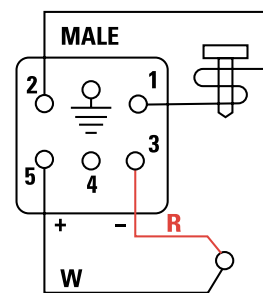
For use with MFFPR2G only

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.)

WIRING DIAGRAMS



Smart Series® Single Zone High Power Mainframes (30 AMP Max.)

MFHP1G



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)

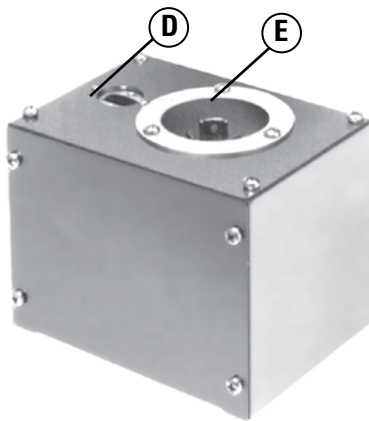
ITEM NUMBER	WATTS (OUTPUT)	CONNECTORS SUPPLIED
MFHP1G	7200	(1) AC1240F (POWER IN) (1) AC1240M (POWER OUT) (1) M2MJ (T / C IN)

Replacement Connectors and Accessories

ITEM NUMBER	DESCRIPTION
MPCH110	10 ft. mold power cable (240 VAC) (1 AC1240F twist-lock connector on mold end; 1 AC1240M twist-lock connector on frame end)
MPCH120	20 ft. mold power cable (240 VAC) (same connectors as MPCH110)
AC1240MI	1-Zone twist-lock mold power input connector (mounts in mold or terminal mounting box; accepts AC1240F twist-lock connector on MPCH110 or MPCH1 20 cable)
TC110	10 ft. thermocouple cable (1 M2MJ mini-plug each end)
TC120	20 ft. thermocouple cable (1 M2MJ mini-plug each end)
AC1240F*	240 VAC twist-lock power input connector (mates with frame power input)
AC1240M*	240 VAC twist-lock power output connector (mates with frame power output)
M2MJ*	thermocouple mini-plug (mates with frame or jack strip connector)
PTCH1TBG	terminal mounting box (mounts to mold; accepts 1 AC1240MI and 1 TCS1)
TCS1	jack strip connector

FRAME DIMENSIONS:

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



TERMINAL MOUNTING BOX PTCH1TBG

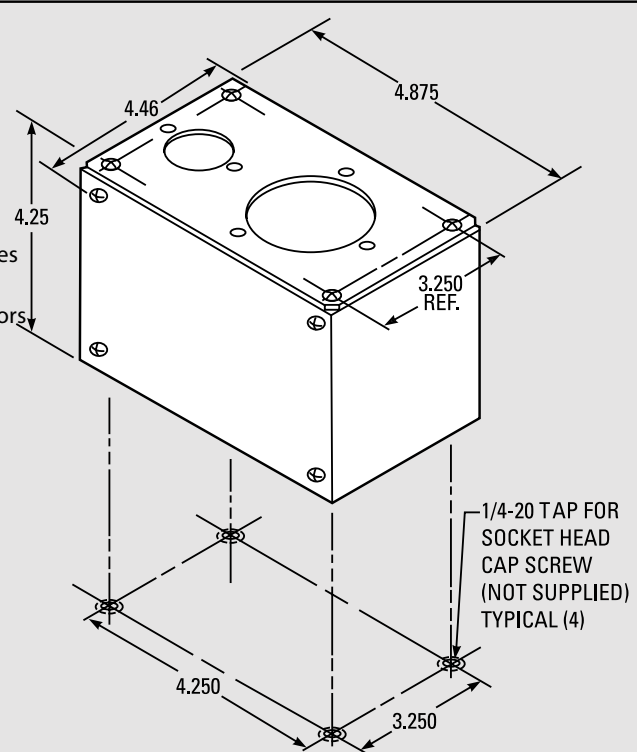
(Connectors shown are ordered separately)

D: TCS1
E: AC1240MI

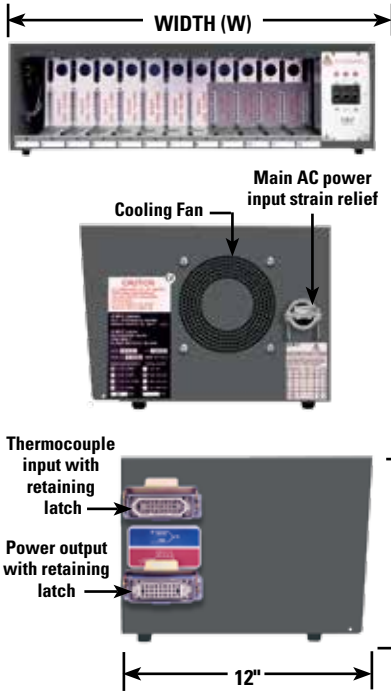
*Included with MFHP1G mainframe

TERMINAL MOUNTING BOX PTCH1TBG

NOTE: Overall dimensions shown include allowances for hardware (assembly screws) but not connectors.



Smart Series® Mainframes (15 AMP)



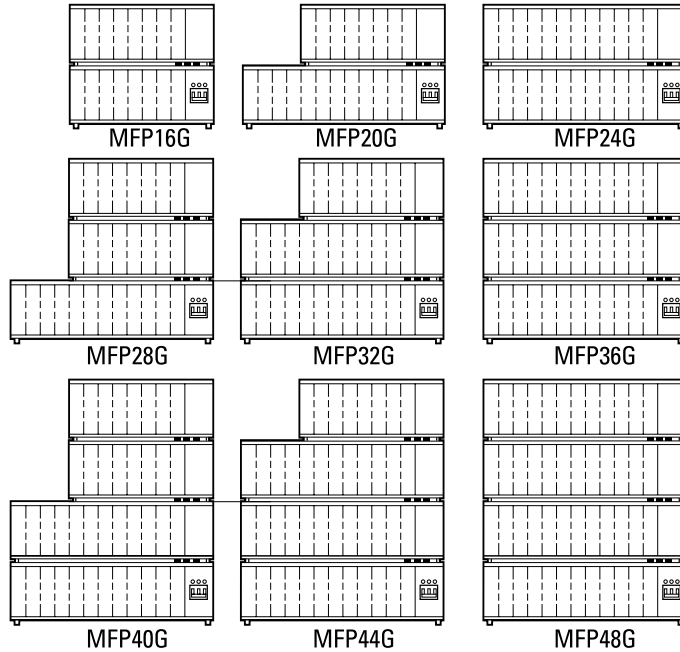
Smart Series® Mainframe (15 AMP Max.) Configurations

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 same time as Mainframe. Control modules, cables, mold connectors and other accessories are ordered separately (see table on next page).

MAINFRAMES (Supplied with 50 AMP, 3-phase circuit breaker)



STACK FRAMES (Supplied with 70 AMP, 3-phase circuit breaker)



- 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

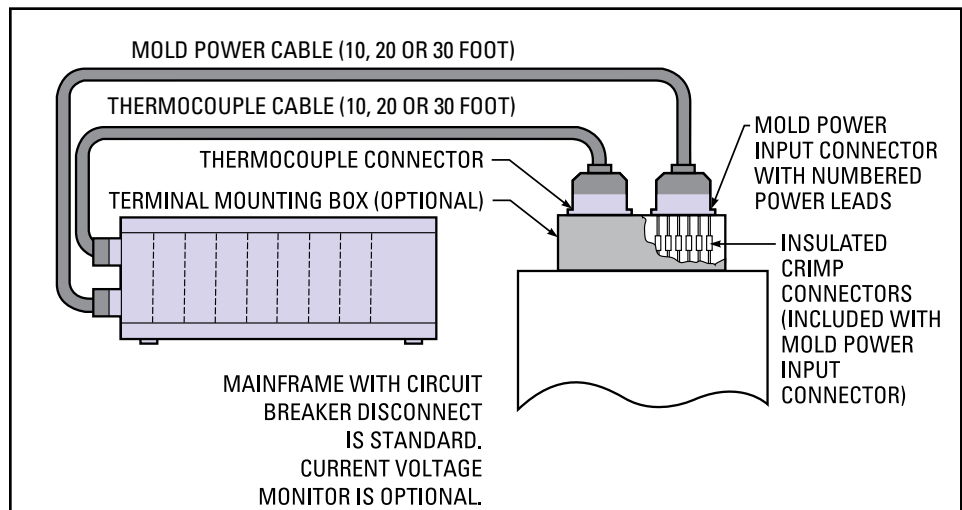
Unless otherwise specified, all Smart Series Mainframes will be supplied to accept 240 VAC, 3 phase, 4-wire, 50-60 Hz input power. Wiring diagram (included on the access cover) illustrates the variety of other voltage, phase and load balancing arrangements possible, such as: (380-415V, 3 phase, 5-wire,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

ITEM NUMBER	W*
MFP5G	14 ³ / ₁₆
MFP8G	20 ³ / ₁₆
MFP12G	28 ³ / ₁₆

* 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.



Smart Series® Mainframes (15 AMP)

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)								
ZONES	"MFP" TYPE FOR TEMP. AND POWER CONTROL	"MFP" TYPE WITH CURRENT VOLTAGE MONITOR	"MFPC" TYPE FOR TEMP. CONTROL AND COMMUNICATIONS	"MFPC" TYPE WITH CURRENT VOLTAGE MONITOR	MOLD POWER CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)		THERMOCOUPLE CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)		MOLD POWER INPUT CONNECTORS (INCL. CRIMP CONNECTORS)		THERMOCOUPLE CONNECTORS	
	ITEM NUMBER	ITEM NUMBER (CV-STYLE)	ITEM NUMBER	ITEM NUMBER (CV-STYLE)	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
5	MFP5G	MFP5GCV	MFPC5G	MFPC5GCV	1	MPC5C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PIC5G	1	MTC5G
8	MFP8G	MFP8GCV	MFPC8G	MFPC8GCV	1	MPC8C10G, C20G or C30G	1	TC8C10G, C20G or C30G	1	PIC8G	1	MTC8G
12	MFP12G	MFP12GCV	MFPC12G	MFPC12GCV	1	MPC12C10G, C20G or C30G	1	TC12C10G, C20G or C30G	1	PIC12G	1	MTC12G
16	MFP16G	MFP16GCV	MFPC16G	MFPC16GCV	2	MPC8C10G, C20G or C30G	2	TC8C10G, C20G or C30G	2	PIC8G	2	MTC8G
20	MFP20G	MFP20GCV	MFPC20G	MFPC20GCV	1	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	1	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	1	PIC8G and PIC12G	1	MTC8G and MTC12G
					1	MPC12C10G, C20G or C30G	1	TC12C10G, C20G or C30G	1	PIC12G	1	MTC12G
24	MFP24G	MFP24GCV	MFPC24G	MFPC24GCV	2	MPC12C10G, C20G or C30G	2	TC12C10G, C20G or C30G	2	PIC12G	2	MTC12G
28	MFP28G	MFP28GCV	MFPC28G	MFPC28GCV	2	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	2	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	2	PIC8G and PIC12G	2	MTC8G and MTC12G
					1	MPC12C10G, C20G or C30G	1	TC12C10G, C20G or C30G	1	PIC12G	1	MTC12G
32	MFP32G	MFP32GCV	MFPC32G	MFPC32GCV	1	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	1	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	1	PIC8G and PIC12G	1	MTC8G and MTC12G
					2	MPC12C10G, C20G or C30G	2	TC12C10G, C20G or C30G	2	PIC12G	2	MTC12G
36	MFP36G	MFP36GCV	MFPC36G	MFPC36GCV	3	MPC12C10G, C20G or C30G	3	TC12C10G, C20G or C30G	3	PIC12G	3	MTC12G
40	MFP40G	MFP40GCV	MFPC40G	MFPC40GCV	2	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	2	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	2	PIC8G and PIC12G	2	MTC8G and MTC12G
					2	MPC12C10G, C20G or C30G	2	TC12C10G, C20G or C30G	2	PIC12G	2	MTC12G
44	MFP44G	MFP44GCV	MFPC44G	MFPC44GCV	1	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	1	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	1	PIC8G and PIC12G	1	MTC8G and MTC12G
					3	MPC12C10G, C20G or C30G	3	TC12C10G, C20G or C30G	3	PIC12G	3	MTC12G
48	MFP48G	MFP48GCV	MFPC48G	MFPC48GCV	4	MPC12C10G, C20G or C30G	4	TC12C10G, C20G or C30G	4	PIC12G	4	MTC12G

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

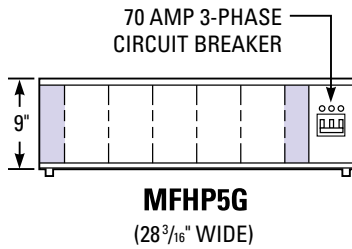
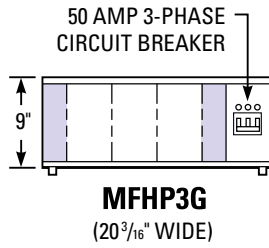
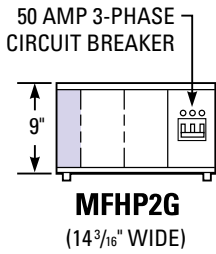
Terminal Mounting Boxes

ZONES	ORDER ITEMS A and B or C					
	(A) FOR POWER INPUT CONNECTORS		(B) FOR THERMOCOUPLE CABLES CONNECTORS		(C) COMBINATION POWER & TC	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
5	1	PIC512TBG	1	MTC5TBG	1	PTC5TBG
8	1	PIC512TBG	1	MTC8TBG	1	PTC8TBG
12	1	PIC512TBG	1	MTC12TBG	1	PTC12TBG
16	2	PIC512TBG	2	MTC8TBG	2	PTC8TBG
20	2	PIC512TBG	1	MTC8TBG and MTC12TBG	1	PTC8TBG and PTC12TBG
			1	MTC12TBG	1	PTC12TBG
24	2	PIC512TBG	2	MTC12TBG	2	PTC12TBG
28	3	PIC512TBG	2	MTC8TBG and MTC12TBG	2	PTC8TBG and PTC12TBG
			1	MTC12TBG	1	PTC12TBG

ZONES	ORDER ITEMS A and B or C					
	(A) FOR POWER INPUT CONNECTORS		(B) FOR THERMOCOUPLE CABLES CONNECTORS		(C) COMBINATION POWER & TC	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
32	3	PIC512TBG	1	MTC8TBG and MTC12TBG	1	PTC8TBG and PTC12TBG
			2	MTC12TBG	2	PTC12TBG
36	3	PIC512TBG	3	MTC12TBG	3	PTC12TBG
40	4	PIC512TBG	2	MTC8TBG and MTC12TBG	2	PTC8TBG and PTC12TBG
			2	MTC12TBG	2	PTC12TBG
44	4	PIC512TBG	1	MTC8TBG and MTC12TBG	1	PTC8TBG and PTC12TBG
			3	MTC12TBG	3	PTC12TBG
48	4	PIC512TBG	4	MTC12TBG	4	PTC12TBG

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)



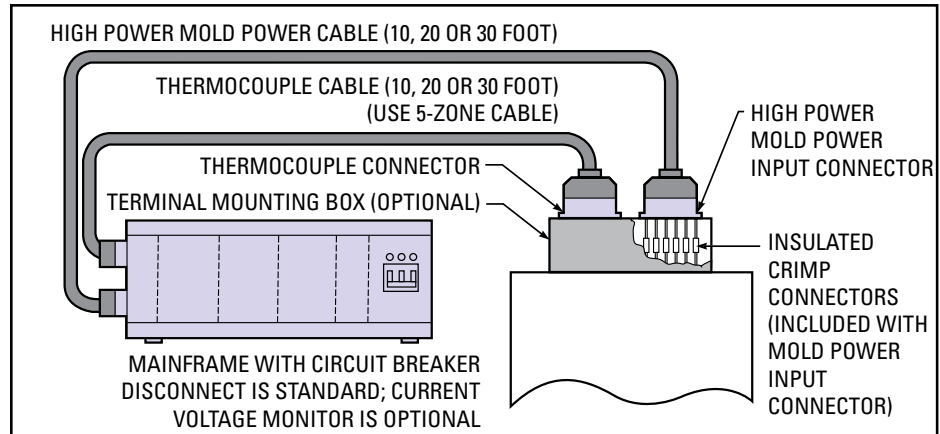
DIMENSIONS ABOVE DO NOT INCLUDE CONNECTORS

all frames are 12" deep

NOTE: Blank panels cover unused zones in frames (shaded panels above). For communications (MFCHP) type frames, these zones may be used for communication modules.



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



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				
ZONES	"MFHP" TYPE FOR TEMP. CONTROL	"MFHP" TYPE WITH CURRENT VOLTAGE MONITOR	"MFCHP" TYPE FOR TEMP. CONTROL AND COMMUNICATIONS	"MFCHP" TYPE WITH CURRENT VOLTAGE MONITOR
	ITEM NUMBER	ITEM NUMBER (CV-STYLE)	ITEM NUMBER	ITEM NUMBER (CV-STYLE)
2	MFHP2G	MFHP2GCV	MFCHP2G	MFCHP2GCV
3	MFHP3G	MFHP3GCV	MFCHP3G	MFCHP3GCV
5	MFHP5G	MFHP5GCV	MFCHP5G	MFCHP5GCV

CABLES AND MOLD CONNECTORS REQUIRED										
(Not included with Mainframes and Must be Ordered Separately)										
ZONES	MOLD POWER CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)			THERMOCOUPLE CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)			MOLD POWER INPUT CONNECTORS (INCL. CRIMP CONNECTORS)		THERMOCOUPLE CONNECTORS	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER		
2	1	MPCH23C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PICH23G	1	MTC5G		
3	1	MPCH23C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PICH23G	1	MTC8G		
5	1	MPCH5C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PICH5G	1	MTC12G		

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

Terminal Mounting Boxes

ORDER ITEMS A and B or C						
ZONES	(A) FOR POWER INPUT CONNECTORS		(B) FOR THERMOCOUPLE CABLES CONNECTORS		(C) COMBINATION POWER & TC	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
2	1	PICH23TBG	1	MTC5TBG	1	PTCH23TBG
3	1	PICH23TBG	1	MTC5TBG	1	PTCH23TBG
4	1	PICH5TBG	1	MTC5TBG	1	PTCH5TBG

NOTE: See page 135-136 for dimensional details. For below-flush mounting of connectors, see mold pocket layouts on pages 133-134.

Smart Series® Digital Current/Voltage Monitor

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.

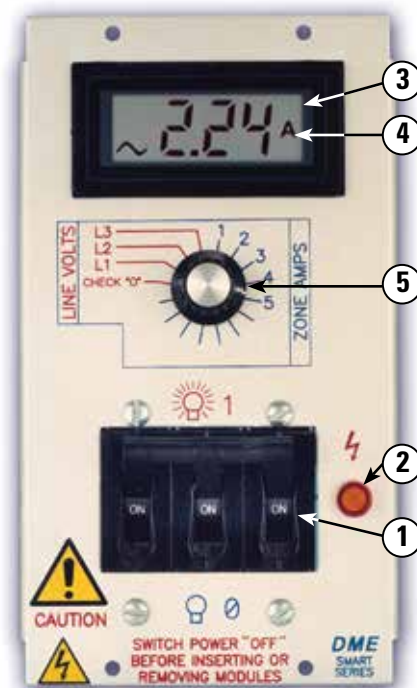
Input Voltage From Each Phase

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

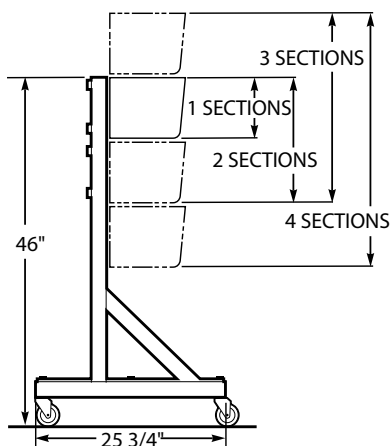
Voltmeter Range	190 to 290 VAC (for 240 volt systems) 90 to 145 VAC (for 120 volt systems)
Voltmeter Accuracy	± 3% of reading, 50 to 60 Hz
Maximum Voltmeter Input	400 VAC
Input Voltage	240/120 VAC, 50 to 60 Hz
Ammeter Range	0 to 2; 0 to 30; 0 to 40 Amperes
Ammeter Accuracy	± 2% @ 0 to 100% Duty Cycle,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



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



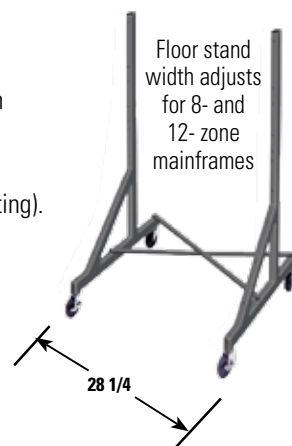
Universal Floor Stand

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).

ITEM NUMBER	RATING
MFS512G	400 LBS
MFS512GHD*	1000 LBS

* HD stand not shown.

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.

ITEM NUMBER	RATING
TK61AG	6 KVA
TK91AG*	9 KVA
TK151AG*	15 KVA
TK301AG**	30 KVA

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 MFS512GHD 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).

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).

ITEM NUMBER
MFBP10G
MFBP30G

Module Replacement Fuses (sold in packages of 5)



ITEM NUMBER	AMPS
ABC1	1
ABC15	15
ABC10	10
13X10	10
13X15	15
RPM0123	15
RPM0124	.062

Insulated Crimp Connectors

For connection of mold power input connector leads to heater leads. (195°F / 90°C maximum temperature)



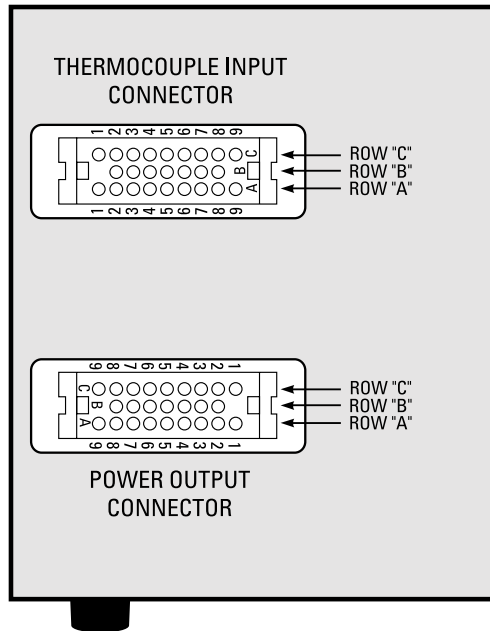
ITEM NUMBER	AMPS	RATING
HWCC1 (Bag of 30)	10-15	16-22 RED
HWCC3 (Bag of 30)	10-15	14-16 BLUE
HWCC2 (Bag of 20)	15-30	10-12 YELLOW

NOTE: Initial supply is provided with mold power input connectors.

Smart Series® Mainframe Connector Wiring

Standard Mainframe Connector Wiring

SIDE OF MAINFRAME



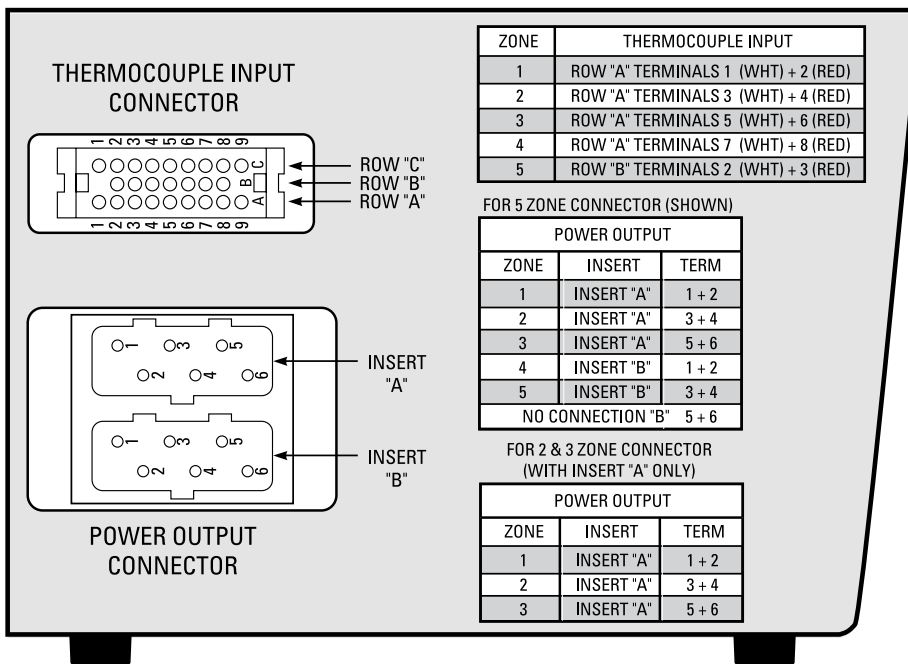
ZONE	THERMOCOUPLE INPUT
1	ROW "A" TERMINALS 1 (WHT) + 2 (RED)
2	ROW "A" TERMINALS 3 (WHT) + 4 (RED)
3	ROW "A" TERMINALS 5 (WHT) + 6 (RED)
4	ROW "A" TERMINALS 7 (WHT) + 8 (RED)
5	ROW "B" TERMINALS 2 (WHT) + 3 (RED)
6	ROW "B" TERMINALS 4 (WHT) + 5 (RED)
7	ROW "B" TERMINALS 6 (WHT) + 7 (RED)
8	ROW "C" TERMINALS 1 (WHT) + 2 (RED)
9	ROW "C" TERMINALS 3 (WHT) + 4 (RED)
10	ROW "C" TERMINALS 5 (WHT) + 6 (RED)
11	ROW "C" TERMINALS 7 (WHT) + 8 (RED)
12	ROW "A" TERM. 9 (WHT) ROW "C" TERM. 9 (RED)
ROW "B" TERMINAL 8 IS NOT USED	

ZONE	POWER OUTPUT
1	ROW "A" TERMINALS 1 + 2
2	ROW "A" TERMINALS 3 + 4
3	ROW "A" TERMINALS 5 + 6
4	ROW "A" TERMINALS 7 + 8
5	ROW "B" TERMINALS 2 + 3
6	ROW "B" TERMINALS 4 + 5
7	ROW "B" TERMINALS 6 + 7
8	ROW "C" TERMINALS 1 + 2
9	ROW "C" TERMINALS 3 + 4
10	ROW "C" TERMINALS 5 + 6
11	ROW "C" TERMINALS 7 + 8
12	ROW "A" + "C" TERMINALS 9
ROW "B" TERMINAL 8 IS NOT USED	

- 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

SIDE OF MAINFRAME



ZONE	THERMOCOUPLE INPUT
1	ROW "A" TERMINALS 1 (WHT) + 2 (RED)
2	ROW "A" TERMINALS 3 (WHT) + 4 (RED)
3	ROW "A" TERMINALS 5 (WHT) + 6 (RED)
4	ROW "A" TERMINALS 7 (WHT) + 8 (RED)
5	ROW "B" TERMINALS 2 (WHT) + 3 (RED)

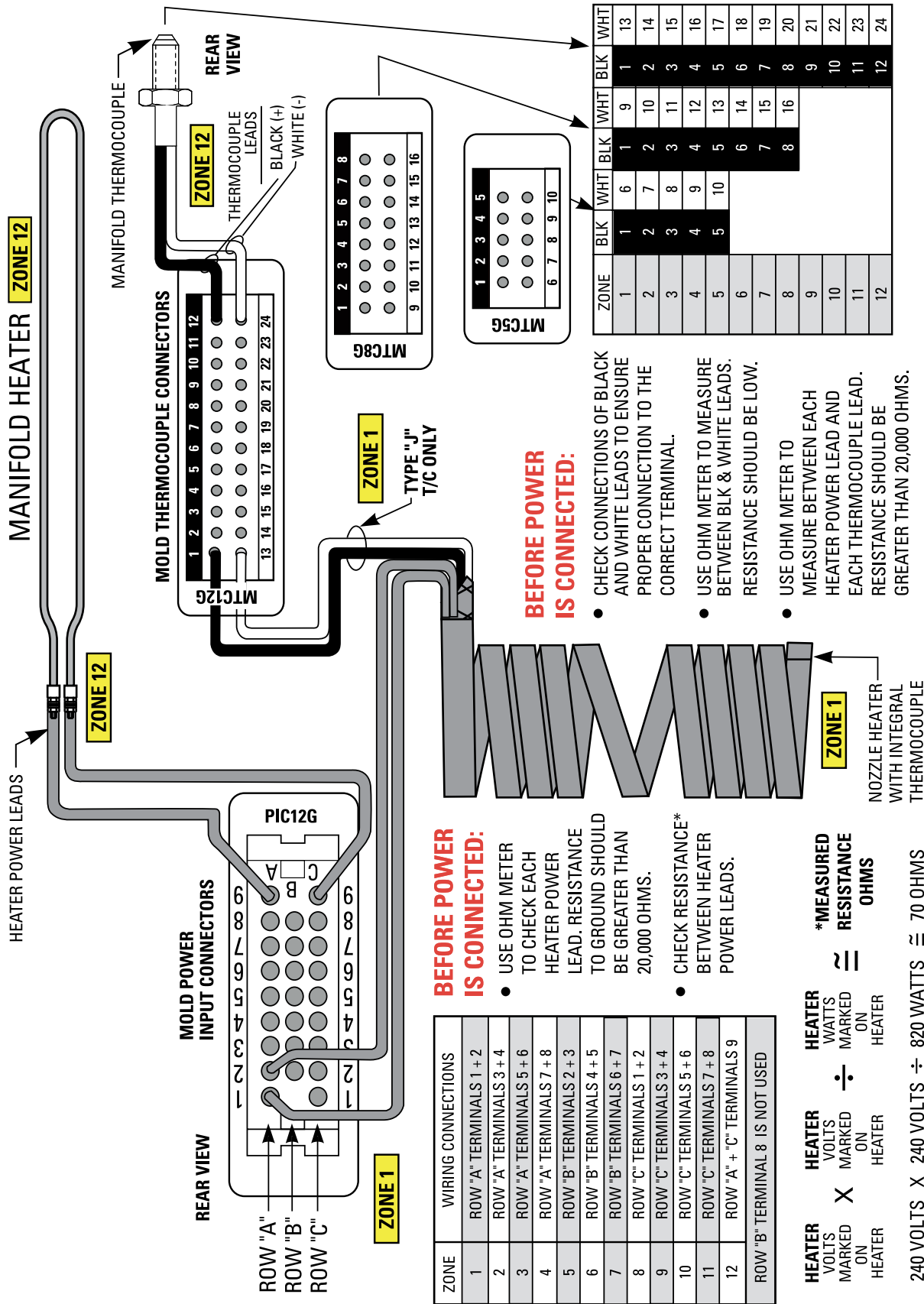
FOR 5 ZONE CONNECTOR (SHOWN)

ZONE	INSERT	TERM
1	INSERT "A"	1 + 2
2	INSERT "A"	3 + 4
3	INSERT "A"	5 + 6
4	INSERT "B"	1 + 2
5	INSERT "B"	3 + 4
NO CONNECTION "B"		5 + 6

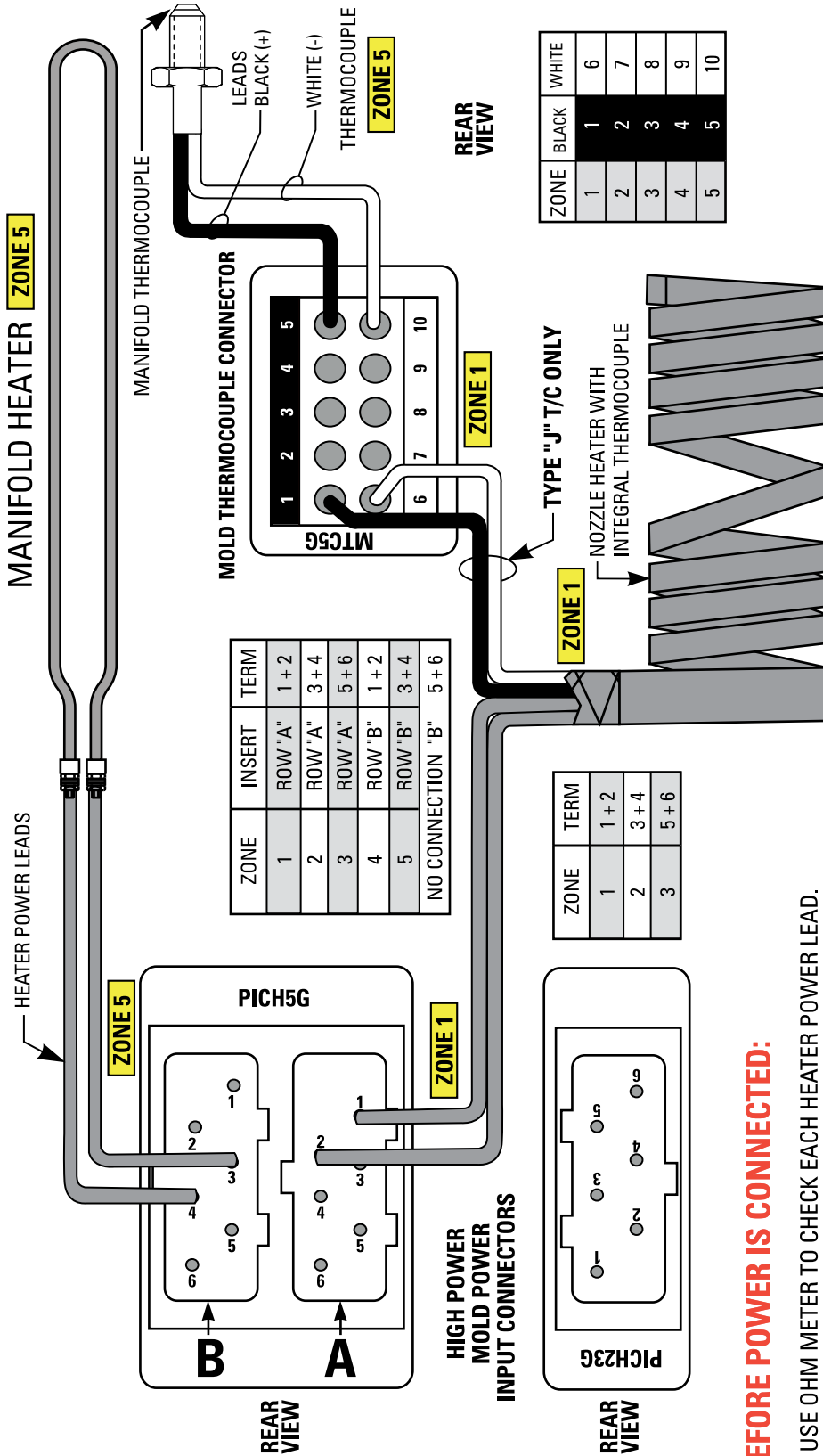
FOR 2 & 3 ZONE CONNECTOR (WITH INSERT "A" ONLY)

ZONE	INSERT	TERM
1	INSERT "A"	1 + 2
2	INSERT "A"	3 + 4
3	INSERT "A"	5 + 6

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



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



BEFORE POWER IS CONNECTED:

- 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.

BEFORE POWER IS CONNECTED:

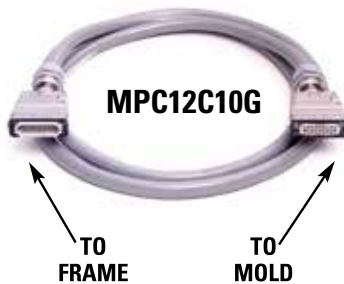
- USE OHM METER TO CHECK EACH HEATER POWER LEAD. RESISTANCE TO GROUND SHOULD BE GREATER THAN 20,000 OHMS.
- CHECK RESISTANCE* BETWEEN HEATER POWER LEADS.

HEATER VOLTS MARKED ON HEATER	HEATER VOLTS MARKED ON HEATER	HEATER WATTS MARKED ON HEATER	*MEASURED RESISTANCE OHMS
240 VOLTS X	240 VOLTS ÷	820 WATTS ÷	≈ 70 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)

10 FOOT LONG	20 FOOT LONG	30 FOOT LONG	NUMBER OF ZONES (MAX.)	FOR CONNECTIONS	
ITEM NUMBER	ITEM NUMBER	ITEM NUMBER		FROM 15 AMP FRAME (S)	TO POWER INPUT CONNECTOR
MPC5C10G	MPC5C20G	MPC5C30G	5	5, 8, 12 ZONE	PIC5G
MPC8C10G	MPC8C20G	MPC8C30G	8	8, 12 ZONE	PIC8G
MPC12C10G	MPC12C20G	MPC12C30G	12	12 ZONE	PIC12G

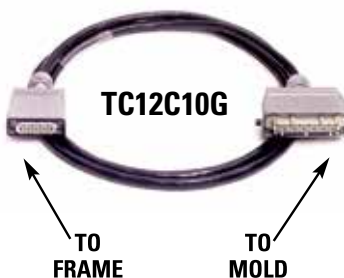
Mold Power Cables (30 AMP Max)

10 FOOT LONG	20 FOOT LONG	NUMBER OF ZONES (MAX.)	FOR CONNECTIONS	
ITEM NUMBER	ITEM NUMBER		FROM 30 AMP FRAME (S)	TO POWER INPUT CONNECTOR
MPCH23C10G	MPCH23C20G	3	2-3 ZONE	PICH23G
MPCH5C10G	MPCH5C20G	5	5 ZONE	PICH5G

SPECIAL CABLES

Virtually any type of Conversion or Special Cable configuration can be provided by special order

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

10 FOOT LONG	20 FOOT LONG	30 FOOT LONG	NUMBER OF ZONES (MAX.)	FOR CONNECTIONS	
ITEM NUMBER	ITEM NUMBER	ITEM NUMBER		FROM 15 AMP FRAME (S)	TO THERMOCOUPLE CONNECTOR
TC5C10G	TC5C20G	TC5C30G	5	5, 8, 12 ZONE	MTC5G
TC8C10G	TC8C20G	TC8C30G	8	8, 12 ZONE	MTC8G
TC12C10G	TC12C20G	TC12C30G	12	12 ZONE	MTC12G

* Used with all 30 AMP Mainframes.

RoHS/WEEE Compliant: Mold Power Input Connectors

For 15 AMP Applications



PIC5G

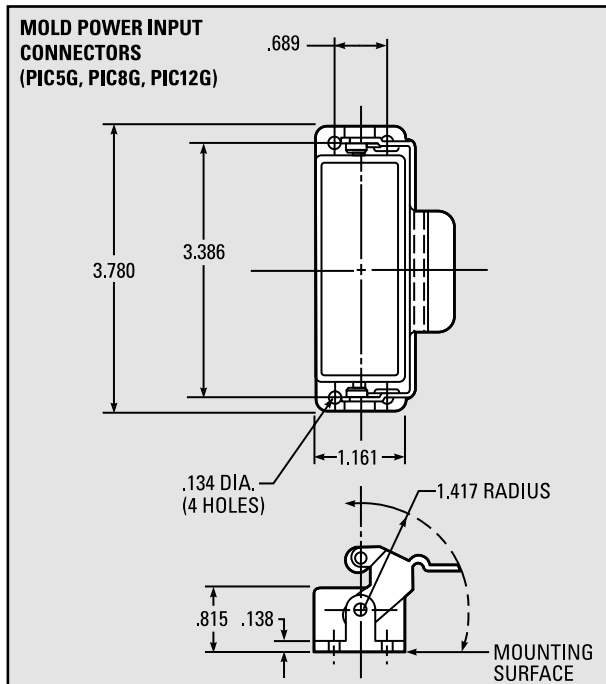


PIC8G



PIC12G

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.



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

Mold Power Input Connectors

ITEM NUMBER	NUMBER OF ZONES (MAX.)	AMPS (MAX.) PER ZONE
PIC5G	5	15
PIC8G	8	15
PIC12G	12	15
PICH23G	3	30
PICH5G	5	30

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

For 30 AMP Applications

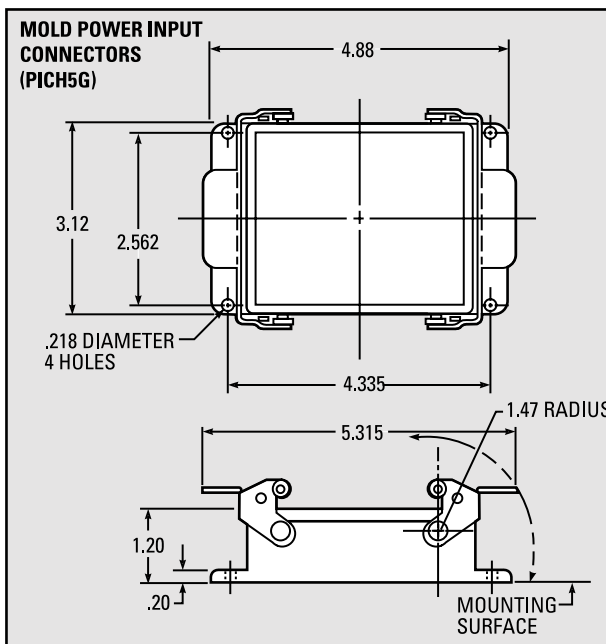


PICH23G



PICH5G

NOTES:
 Connector PICH23G is dimensionally identical to thermocouple connector MTC8G. See next page.
 For PICH23G and PICH5G, direct wiring without crimp connectors is possible by removing 6" leads.



Insulated Crimp Connectors

ITEM NUMBER	AMPS	FOR WIRE GAUGE
HWCC1 30 PCS.	10-15	16-22
HWCC3 30 PCS.	15	14-16
HWCC2 20 PCS.	30	10-12

NOTE: Initial supply is provided with mold power input connectors. Also, see page 126.



RoHS/WEEE Compliant: Mold Thermocouple Connectors



MTC5G



MTC8G



MTC12G



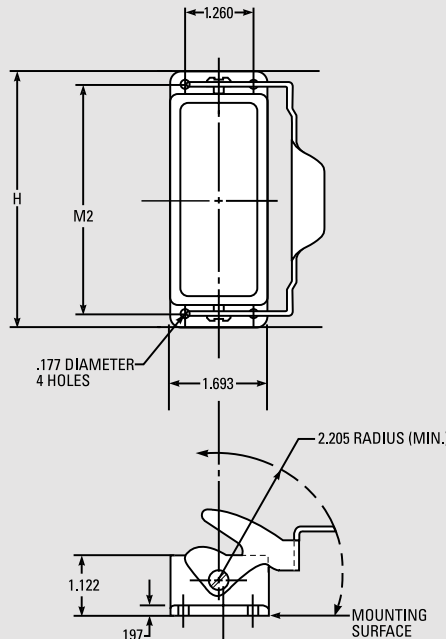
TPC0001

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.

ITEM NUMBER	NUMBER OF PINS	DIMENSION	
		M2	H
MTC5G	10	3.268	3.662
MTC8G	16	4.055	4.449
MTC12G	24	5.118	5.512
TPC0001	48	5.827	6.496

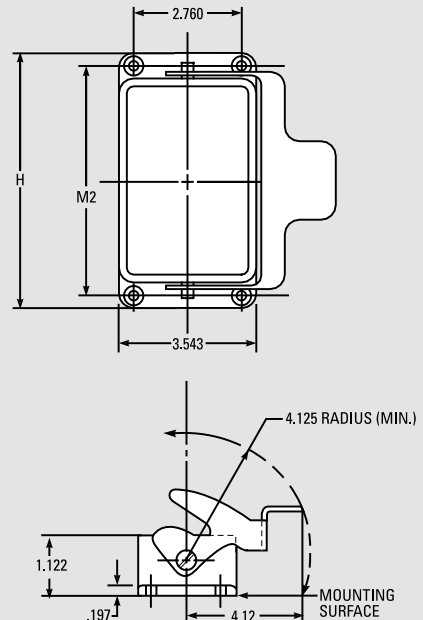
NOTE: MOLD POWER INPUT CONNECTOR PICH23G IS DIMENSIONALLY IDENTICAL TO MTC8G

**MOLD THERMOCOUPLE CONNECTOR
MTC5G
MTC8G
MTC12G**



NOTE: DIMENSIONS SHOWN ARE FOR THE MTC5G, MTC8G AND MTC12G CONNECTORS

MOLD POWER AND THERMOCOUPLE CONNECTOR TPC0001



Smart Series® | Mold Thermocouple Connectors

Connectors

ITEM NUMBER	NUMBER OF ZONES (MAX.)
MTC5G*	5
MTC8G	8
MTC12G	12
TPC0001	12

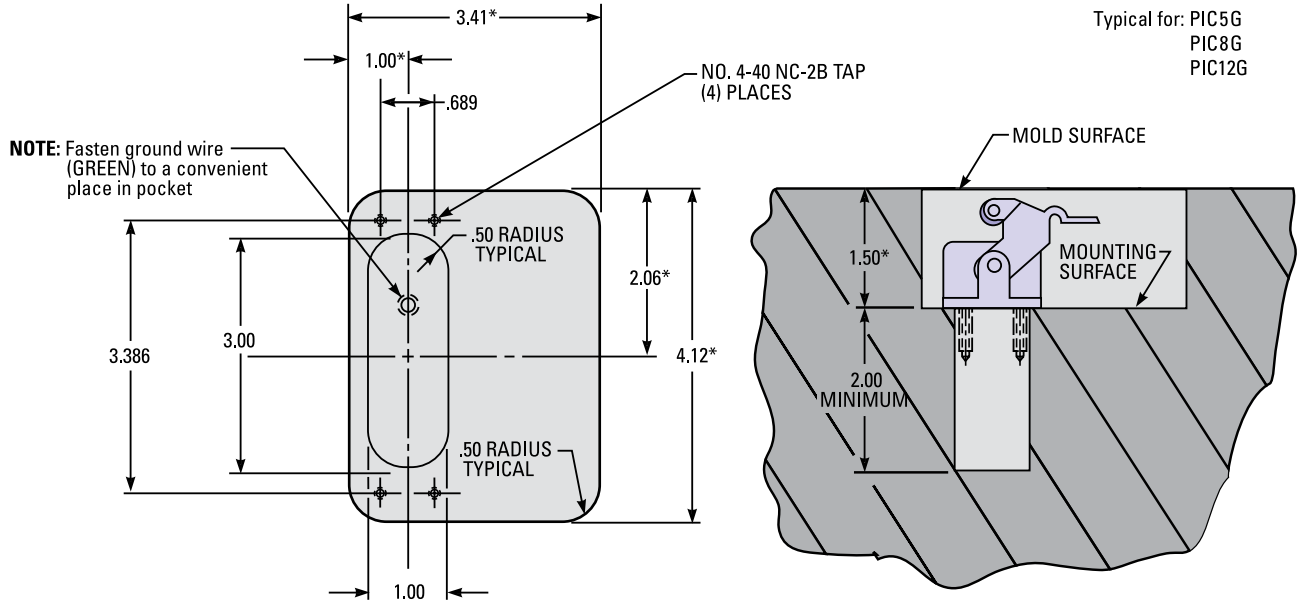
* Use with 2, 3 and 5-zone, 30 AMP mainframes

Mold Connector Pocket Layouts

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

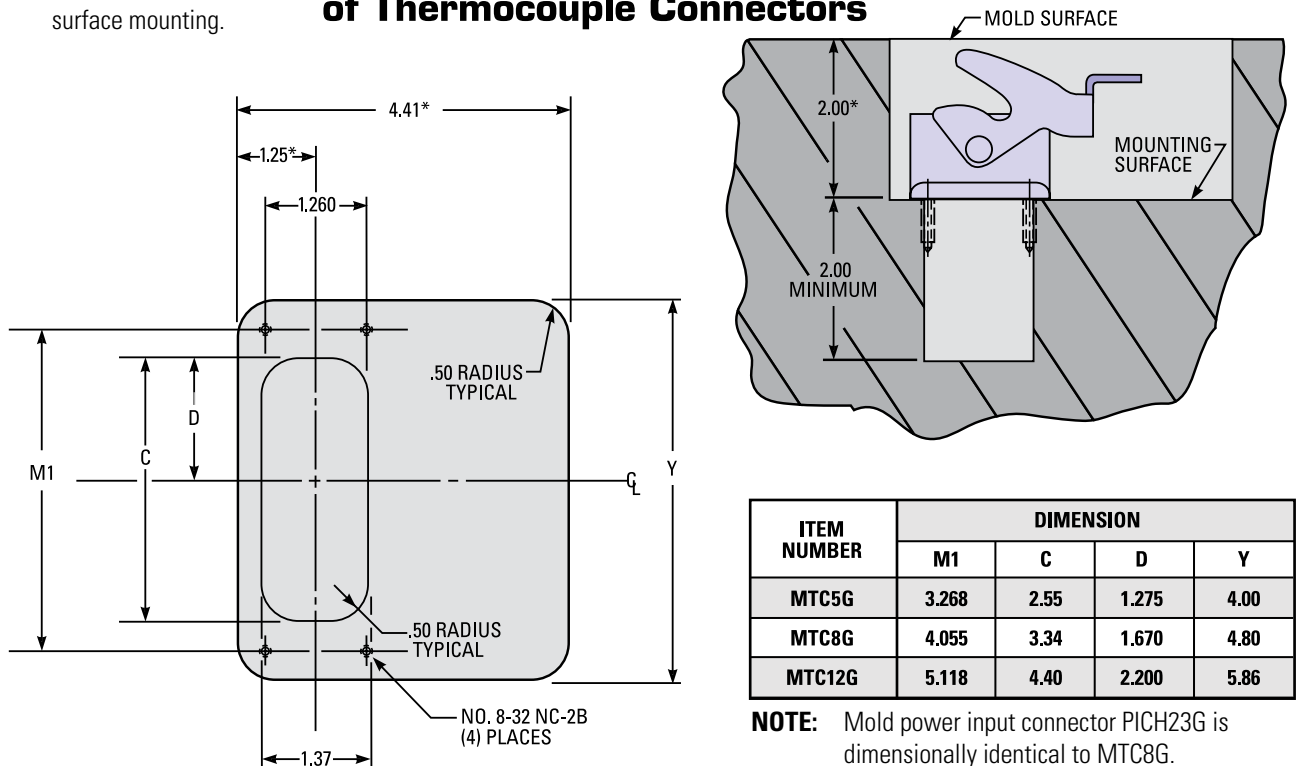
Where space or mold handling and storage requirements do not permit the use of Terminal Mounting Boxes, the connectors can be below-flush or surface mounted. See drawings below and next page for dimensions.

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

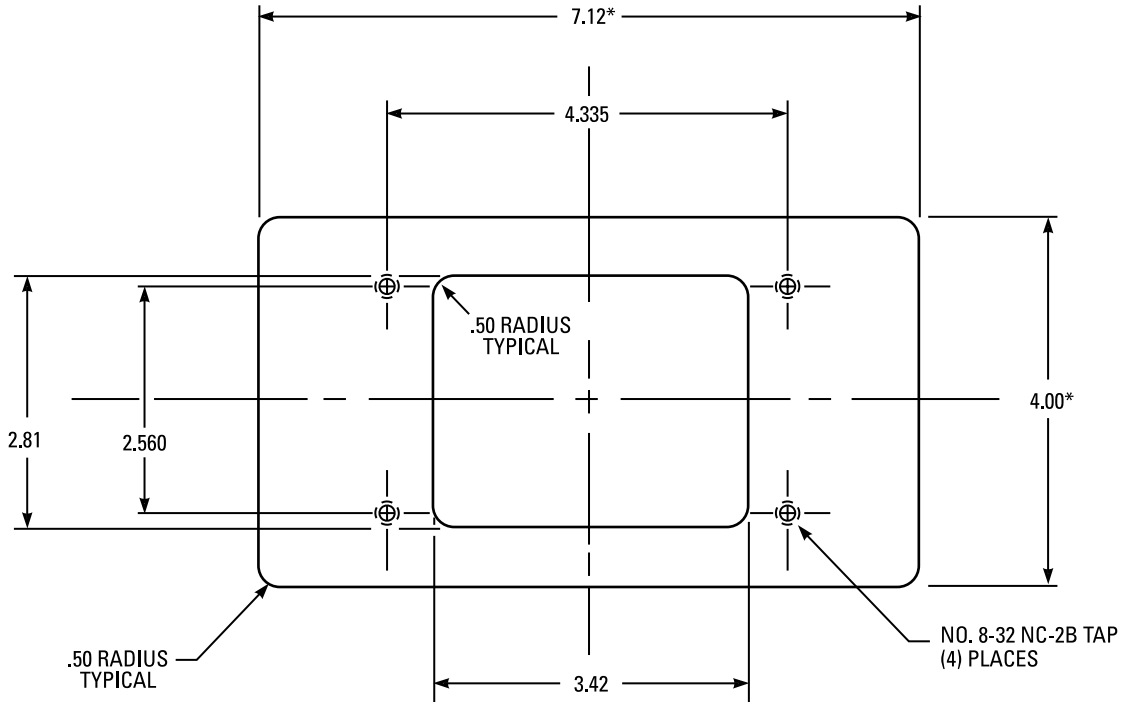


ITEM NUMBER	DIMENSION			
	M1	C	D	Y
MTC5G	3.268	2.55	1.275	4.00
MTC8G	4.055	3.34	1.670	4.80
MTC12G	5.118	4.40	2.200	5.86

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

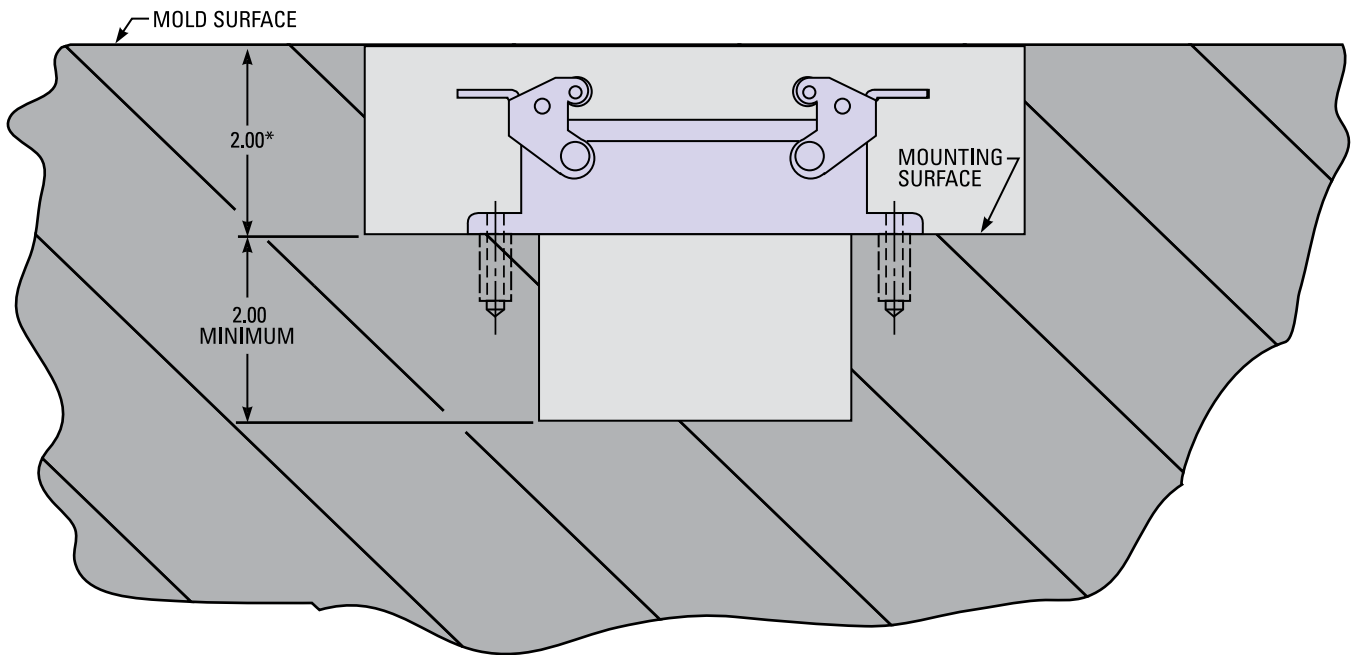
Mold Connector Pocket Layouts

Below-Flush and Surface Mounting of Mold Power Input Connectors (30 AMP)



For PICH5G

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



For PICH23G

(Use pocket dimensions shown on pages 131-132 as detailed for thermocouple connector MTC8G.)

RoHS/WEEE Compliant: Terminal Mounting Boxes

Pre-wired Combination Terminal Mounting Boxes

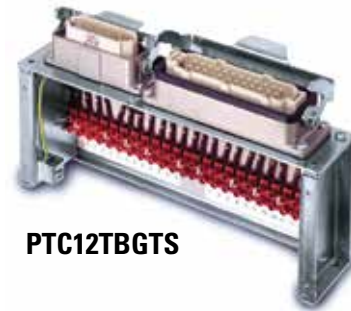
Includes terminal strip for ease of wiring, all necessary connectors installed, and power connector pre-wired to a terminal strip. All units shown without covers.



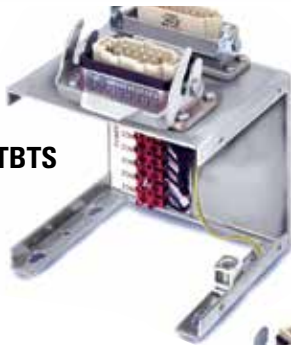
PTC5TBGTS



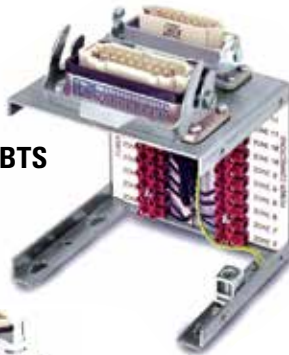
PTC8TBGTS



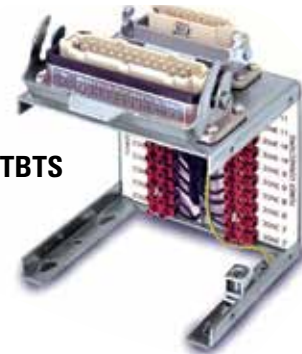
PTC12TBGTS



PTC5TBTS



PTC8TBTS



PTC12TBTS



PTC210TBGTS

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

Combination Terminal Mounting Boxes – with Terminal Strip

ITEM NUMBER	X	Y	H	M1	M2	ACCEPTS
PTC210TBGTS*	2.75	4.88	4.25	1.500	4.250	MPTC10/MPTC20
PTC2TBGTS*	2.75	4.88	4.25	1.500	4.250	PTC0110/PTC0120
PTC5TBGTS**	2.75	8.66	4.25	1.500	8.031	MPC5C(10 or 20)G/TC5C(10 or 20)G
PTC8TBGTS**	2.75	9.47	4.25	1.500	8.843	MPC8C(10 or 20)G/TC8C(10 or 20)G
PTC12TBGTS**	2.75	10.53	4.25	1.500	9.906	MPC12C(10 or 20)G/TC12C(10 or 20)G
PTC24TBGTS**	4.18	10.53	4.10	3.25	9.91	(2) MPC12C(10 or 20)G / (2) TC12C(10 or 20)G
PTC36TBGTS**	4.18	16.50	4.10	3.25	15.88	(3) MPC12C(10 or 20)G / (3) TC12C(10 or 20)G,
PTC5TBTS**	5.00	6.13	5.12	2.625	5.000	MPC5C(10 or 20)G/TC5C(10 or 20)G
PTC8TBTS**	5.00	6.13	5.12	2.625	5.000	MPC8C(10 or 20)G/TC8C(10 or 20)G
PTC12TBTS**	5.00	6.13	5.12	2.625	5.000	MPC12C(10 or 20)G/TC12C(10 or 20)G

** 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



PTC8TBG



PTC5TBG



PTC0012



PIC512TBG



PTC210

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 pre-cut 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.

Terminal Mounting Boxes for Mold Power Input Connectors

ITEM NUMBER	X [†]	Y	H [†]	M1	M2	ACCEPTS
PIC512TBG	2.75	4.875	4.25	1.500	4.250	PIC5, 8 or 12G
PICH23TBG	2.75	5.614	4.25	1.500	4.990	PICH23G
PICH5TBG	4.46	6.676	4.25	3.250	6.052	PICH5G

Terminal Mounting Boxes for Thermocouple Connectors

ITEM NUMBER	X [†]	Y	H [†]	M1	M2	ACCEPTS
MTC5TBG	2.75	4.875	4.25	1.500	4.250	MTC5G
MTC8TBG	2.75	5.614	4.25	1.500	4.990	MTC8G
MTC12TBG	2.75	6.676	4.25	1.500	6.052	MTC12G

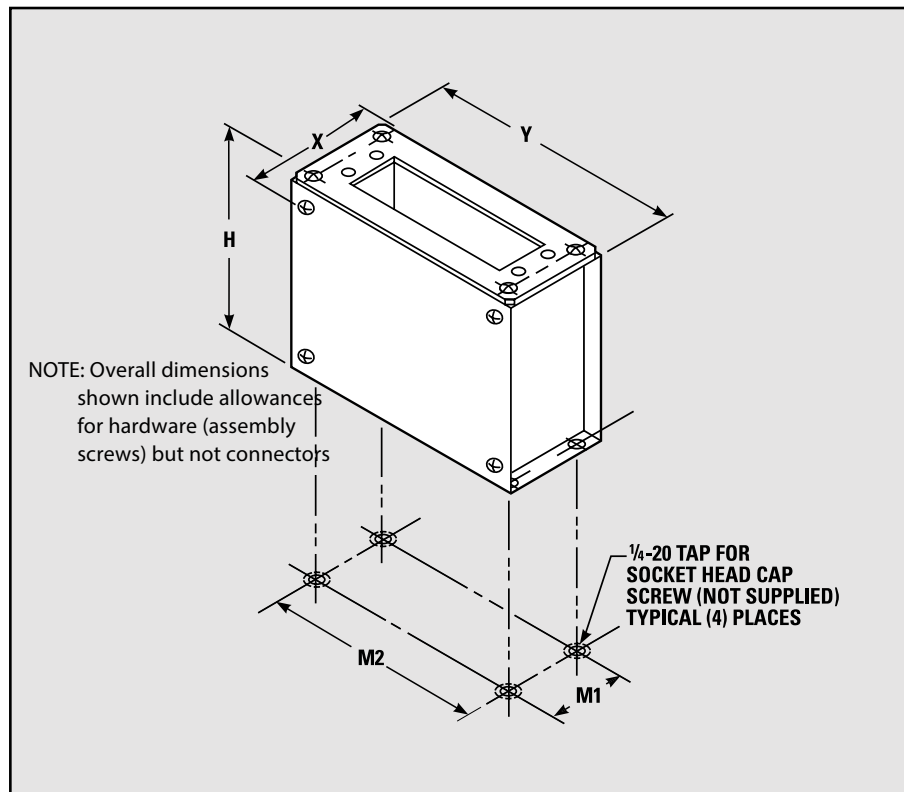
Combination Terminal Mounting Boxes

ITEM NUMBER	X [†]	Y	H [†]	M1	M2	ACCEPTS
PTC210	2.75	4.88	4.25	1.500	4.250	(2) CKPTIC1
PTC5TBG	2.75	8.66	4.25	1.500	8.031	PIC5G, MTC5G
PTC8TBG	2.75	9.47	4.25	1.500	8.843	PIC8G, MTC8G
PTC12TBG	2.75	10.53	4.25	1.500	9.906	PIC12G, MTC12G
PTCH1TBG**	4.46	4.88	4.25	3.250	4.250	AC1240MI, TCS1
PTCH23TBG	2.75	10.53	4.25	1.500	9.906	PICH23G, MTC5G
PTCH5TBG	4.46	11.06	4.25	3.250	10.431	PICH5G, MTC5G
PTC0012	4.46	7.66	4.25	3.350	7.160	TPC0001

[†] 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



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

COMPATIBLE WITH TAS0512

ALARM AND SYSTEM CONTROL FUNCTIONS. SEE PAGES 143-144.



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

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 (See pages 148-149 for more information on these capabilities)
- **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
 - For easier detection of faults
- **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

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

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

MODULE ITEM NUMBER	VOLTAGE (VAC)	AMPS	WATTS
SSM1512	240	15	3600
SSM1511	120	15	1800
SSM3012	240	30	7200

Warranty:

Two years
(excluding triac and fuses)

Fuse Requirements (15 AMP only)

- (2) ABC15 fuses (Bussman only)
- (2) spare fuses included with module

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

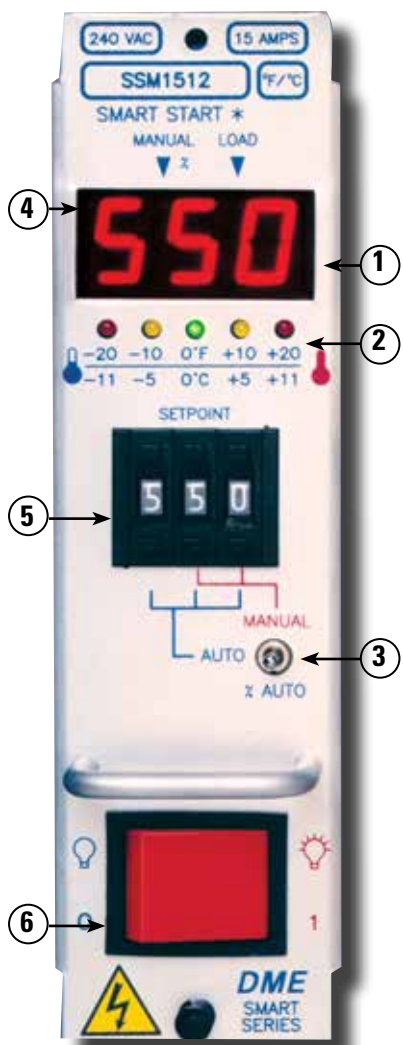
Left LED illuminates during MANUAL mode.
Right LED illuminates when power is supplied to heater.
Right LED blinks on and off during SmartStart®.

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	

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

**COMPATIBLE WITH TAS MODULE
ALARM AND STANDBY HEAT
FUNCTIONS. SEE PAGES 143-144.**

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 $\pm 30^{\circ}\text{F}$ 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.

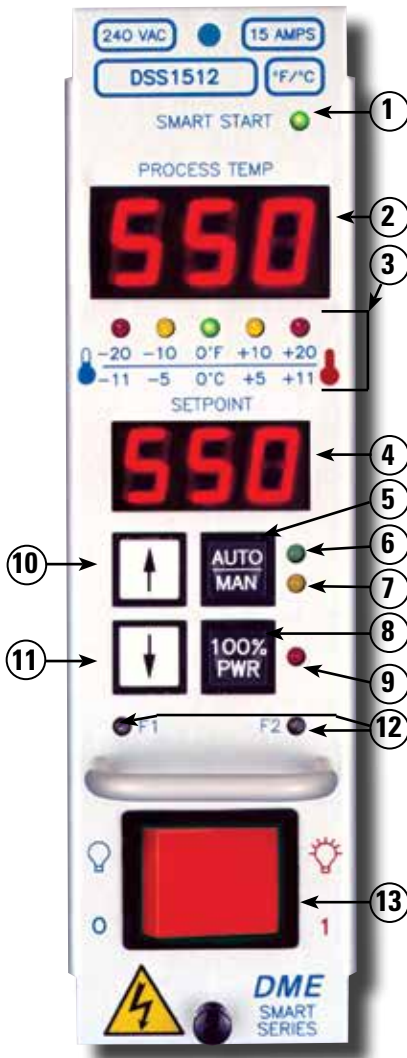
11. Down Arrow

Decreases desired setpoint value.

12. F1/F2 Lights

Illuminate when fuse is blown.

13. Power On/Off Switch



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

Front Panel Digital LED Indicators



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
Smart Start Override Temperature:	256°F (124°C)
100% Power:	Applies 100% power to the output. Software selectable inhibit or S = 15, L = 30 seconds.
Operational Mode Priority:	<ul style="list-style-type: none"> 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 Isolation:	Isolated by control circuit power supply
Cold Junction Compensation:	Automatic, better than 0.03°F/F (0.015°C/°C).
T/C Break, Reversed & Shorted Protection:	Automatically inhibits power to heater unless bumpless transfer is invoked.
Input Impedance:	5.6 Megohms
Input Amplifier Stability:	Greater than 0.02°F/°F (0.01°C/°C).
Common Mode Rejection Ratio:	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. 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 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 6 watts, excluding load.
Dimensions:	15 AMP: 2"W x 7"H x 7 1/2"D (5.08 x 17.78 x 19.05 cm) 30 AMP: 4"W x 7"H x 7 1/2"D (10.06 x 17.78 x 19.05 cm)

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: (2) spare fuses included with module.

WARRANTY: Two years (excluding triac and fuses)

Smart Series Microprocessor-Based Temperature Control Modules

(240 VAC, standard)

ITEM NUMBER	AMPS	WATTS
DSS1512	15	3600
DSS3012	30	7200

(120 VAC, optional)

ITEM NUMBER	AMPS	WATTS
DSS1511	15	1800

RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Color Touch Screen Display

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)

Zone temperature	260°C or 500°F
Standby level	100°C or 180°F
Boost level	75°C or 135°F
Over temperature range	10°C or 18°F
Under temperature range	
Ramp	On
Auto-Manual	On
Extended alarms for Manual, Standby and Boost	Off

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.



- ← ① Actual temperature (and scale)
- ← ② Current mode shows set-point
- ← ③ Percentage power applied
- ← ④ Current reading

Front Panel Controls and Indicators

RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Color Touch Screen Display

Individual Card Diagnostics

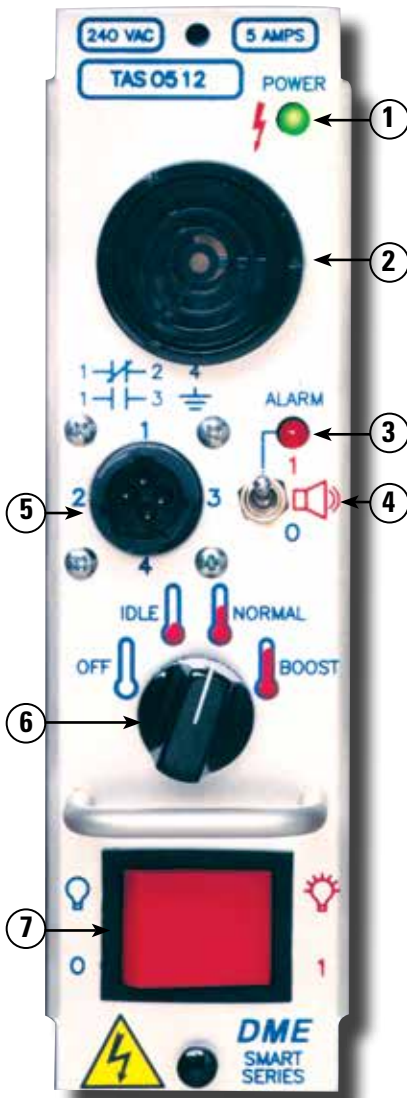
The control system has several features which provide a diagnosis of faults in the control system, the tool heaters and thermocouple sensors.

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.

ERROR MESSAGE	CAUSE	ACTION
ERR!	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.	Check thermocouple wiring; it may be reversed. Heater wiring may be faulty or element may be open circuit.
FUSE	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.	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.
GND	The system has detected an ground fault.	Check your heater wiring for a low impedance path to the ground.
LINE	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.	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.
REV	The card has detected an abnormal input at the T/C termination that indicates a shorted or reversed thermocouple.	If the REV alarm persists, switch off the controller and investigate the offending zone.
T/C	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.	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.

Temperature Alarm/System Control Modules



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 heater 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.

Temperature Alarm/System Control Modules

ITEM NUMBER	VOLTS
TAS0512	240 VAC
TAS0511	120 VAC

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).

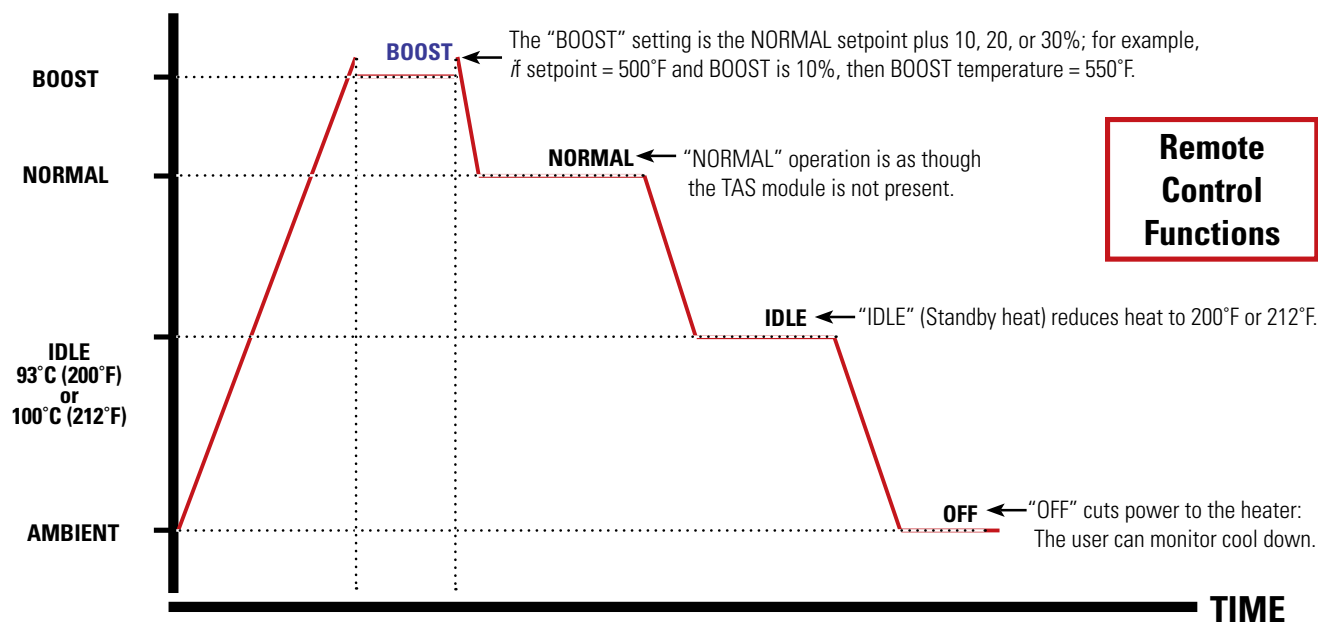
TAS Module Compatibility

NOTE:

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

MODULE	FUNCTIONS			
	ALARM	IDLE	BOOST	OFF
SSM1502/01/12/11	✓	✓	✓	✓
SSM3002/12	✓	✓	✓	✓
DSS1502/01/12/11	✓	✓		
DSS3002/12	✓	✓		
TSM1512	✓	✓	✓	✓

MODULE	FUNCTIONS			
	ALARM	IDLE	BOOST	OFF
CSS1502/01	✓	✓		
CSS3002	✓	✓		
SSM15G	✓			
SSM15G1	✓			
SSM30G	✓			



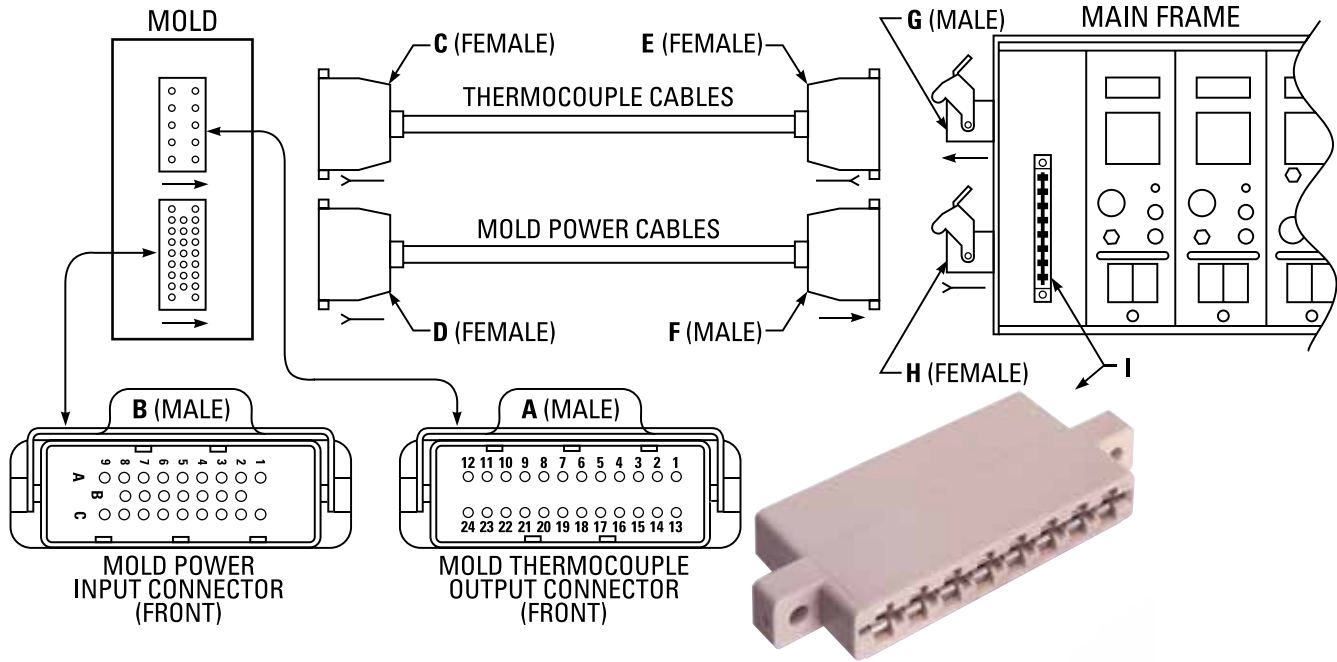
Remote Control Functions

Upgrade Kits For Converting to Communications Mainframes

ITEM NUMBER	MAIN FRAME
CIK4	4-ZONE
CIK5	5-ZONE
CIK7	7-ZONE
CIK8	8-ZONE
CIK11	11-ZONE
CIK12	12-ZONE
CIK16	16-ZONE
CIK20	20-ZONE
CIK24	24-ZONE

ITEM NUMBER	MAIN FRAME
CIK28	28-ZONE
CIK32	32-ZONE
CIK36	36-ZONE
CIK40	40-ZONE
CIK44	44-ZONE
CIK48	48-ZONE
CIK2HP	2-ZONE HIGH POWER
CIK3HP	3-ZONE HIGH POWER
CIK5HP	5-ZONE HIGH POWER

Replacement Parts and Service Items for DME Smart Series® Temperature Control Systems



NOTE: For upper inside communications connectors, see previous page.

Connectors / Connector Kits (5-48 zone, 15 Amp; 2-5 zone, 30 Amp)

REFERENCE LETTER	DESCRIPTION	ITEM NUMBER
A	Mold Thermocouple Output Connector	see page 132
B	Mold Power Input Connector	see page 131
C	Mold End Kit for 5-Zone Thermocouple Cable (10, 15 or 30 AMP)	CKTF15G
	Mold End Kit for 8-Zone Thermocouple Cable (10, 15 or 30 AMP)	CKTF18G
	Mold End Kit for 12-Zone Thermocouple Cable (10, 15 or 30 AMP)	CKTF112G
D	Mold End Kit for all 10 or 15 AMP Power Cables	CKPF112BG
	Mold End Kit for all 2 or 3-Zone 30 AMP Power Cables	CKPF13CG
	Mold End Kit for all 5-Zone 30 AMP Power Cables	CKPF15CG
E	Frame End Kit for all Thermocouple Cables (10, 15 or 30 AMP)	CKTF112AG
F	Frame End Kit for all 10 or 15 AMP Power Cables	CKPM112BG
	Frame End Kit for 2 or 3-Zone 30 AMP Power Cables	CKPM13CG
	Frame End Kit for all 5-Zone 30 AMP Power Cables	CKPM15CG
G	Thermocouple Input Kit for all Mainframes (10, 15 or 30 AMP)	CKTM212AG
H	Power Output Kit for all 10 or 15 AMP Power Cables	CKPF212BG
	Power Output for all 2 or 3-Zone 30 AMP Power Cables	CKPF32CG
	Power Output Kit for all 5-Zone 30 AMP Power Cables	CKPF25CG
I	Edge Card Connector Kit for all Mainframe PC Boards (10, 15 or 30 AMP)	CKF312G

Replacement Parts and Service Items for DME Smart Series® Temperature Control Systems

Mainframe, Cable Components, and Service Tools*

CBD10M	10 AMP 2 POLE, CIRCUIT BREAKER USED IN MFP1G AND MFP1G1	
CBD20M	20 AMP 2 POLE, CIRCUIT BREAKER USED IN MFR2G	
CBD30M	30 AMP 2 POLE, CIRCUIT BREAKER USED IN MFFPR2G AND MFHP1G	
CBD50	50 AMP 3 POLE, CIRCUIT BREAKER USED IN 5 THROUGH 12 ZONE MAINFRAMES	
CBD70	70 AMP 3 POLE, CIRCUIT BREAKER USED IN 16 THROUGH 48 ZONE & HIGH POWER MAINFRAMES	
PIN0114	14 GAUGE MALE PIN FOR "B" & "F" POWER CONNECTORS (PACKAGE OF 30)	SEE PREVIOUS PAGE
PIN0214	14 GAUGE FEMALE SOCKET FOR "D" & "H" POWER CONNECTORS (PACKAGE OF 30)	SEE PREVIOUS PAGE
PIN0120	20 GAUGE MALE PIN FOR "G" THERMOCOUPLE CONNECTOR (PACKAGE OF 30)	SEE PREVIOUS PAGE
PIN0220	20 GAUGE FEMALE PIN FOR "E" THERMOCOUPLE CONNECTOR (PACKAGE OF 30)	SEE PREVIOUS PAGE
WHT1919	CRIMP TOOL FOR ALL PIN-XXXX LISTED ABOVE	
RPM0048	EXTRACTION TOOL FOR ALL PIN-TYPE CONNECTOR PINS	
RPM0038	NEON INDICATORS USED ON 240 VAC MAINFRAME CIRCUIT BREAKER PANELS	
RPM0044	CARD GUIDES FOR ALL MAINFRAMES	
RPM0046	PINS FOR WHITE EDGE CARD CONNECTORS "I" (PACKAGE OF 20)	
RPM0059	PANEL MOUNT BASE & LATCH FOR 5-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0060	PANEL MOUNT BASE & LATCH FOR 8-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0061	PANEL MOUNT BASE & LATCH FOR 12-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0062	MALE INSERT FOR 5 ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0063	MALE INSERT FOR 8-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0064	MALE INSERT FOR 12-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0065	FEMALE INSERT FOR 5-ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0066	FEMALE INSERT FOR 8-ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0067	FEMALE INSERT FOR 12-ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0068	HOOD FOR 5 ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0069	HOOD FOR 8 ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0070	HOOD FOR 12 ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0071	HOOD FOR 5, 8 & 12 POWER & THERMOCOUPLE CABLE CONNECTIONS "D", "E" & "F"	SEE PREVIOUS PAGE
RPM0072	MALE INSERT FOR "B", "F" & "G" (15 AMP CONNECTOR RATING IS EXCLUSIVE TO DME)	SEE PREVIOUS PAGE
RPM0073	FEMALE INSERT FOR "D", "E" & "H" (15 AMP CONNECTOR RATING IS EXCLUSIVE TO DME)	SEE PREVIOUS PAGE

*(Reference page 134-147 for Letter Designations)

All Smart Series Modules

ABC1	1 AMP 250 VAC FUSE
ABC3	3 AMP 250 VAC FUSE - NOTE: THESE LOWER POWER FUSES ARE RECOMMENDED FOR NOZZLES
ABC5	5 AMP 250 VAC FUSE - NOTE: THESE LOWER POWER FUSES ARE RECOMMENDED FOR NOZZLES
ABC10	10 AMP 250 VAC FUSE - NOTE: REQUIRED FOR 15 AMP MODULES USED IN 10 AMP FRAMES
ABC15	15 AMP 250 VAC FUSE
RPM0123	15 AMP 250 VAC FUSE - ULTRAFast
RPM0124	.062 AMP TC FUSE FOR TSM MODULES ONLY
NYL0001	"NYLATCH" MODULE RETENTION PLUNGER AND GROMMET (10/PKG) - NOTE: AT THE BOTTOM OF EACH MODULE
RPM0008	POWER ROCKER SWITCH FOR ALL MODULES EXCEPT DSS AND CSS1524
RPM0009	TRANSFORMER TYPE DST416 FOR ALL MODULES EXCEPT DSS & TAS
RPM0027	ALUMINUM HANDLE FOR 15 AMP MODULES
RPM0039	30 AMP 2 POLE, CIRCUIT BREAKER FOR MODULES
RPM0023	TRIAC - TYPE Q6040P 40 AMP 600 VOLT FOR USE ON ALL MODULES
RPM0054	TRIAC - TYPE BTA40800B 40 AMP 800 VOLT FOR USE ON ALL MODULES EXCEPT CSS
RPM0050	2200 OHM FLAME PROOF FUSIBLE LINK RESISTOR USED IN THERMOCOUPLE CIRCUIT (10/PK) USED ON ALL MODULES
RPM0088	A/D CONVERTER FOR SSM15G, SSM15G1, SSM30G, SSH1001, SSH-1002 AND ALL CSS MODULES

Replacement Parts and Service Items for DME Smart Series® Temperature Control Systems

CSS15G, CSS30G, CSS1502, CSS3002

CSS0001	MICROPROCESSOR FOR CSS15G
CSS0002	MICROPROCESSOR FOR CSS1502
RPM0011	TRIAC DRIVER U14
RPM0012	OPTOCOUPLER U9 & U11
RPM0013	OPERATIONAL AMPLIFIER U8 & U13
RPM0014	OPERATIONAL AMPLIFIER U3

DSS15G, DSS30G, DSS1502, DSS3002

DSS0001	MICROPROCESSOR FOR DSS15G, DSS15G1 & DSS30G
DSS0002	MICROPROCESSOR FOR DSS1501, DSS1502 & DSS3002
RPM0020	TRANSFORMER
RPM0022	TRIAC DRIVER Q1
RPM0024	POWER ROCKER SWITCH
RPM0086	315 MA TIME LAG FUSE F3 (USED IN DSS1501, 1502, & 3002 MODULES ONLY); CHECK YOUR MODULE!
RPM0089	200 MA TIME LAG FUSE F3 (USED IN DSS1501, 1502, & 3002 MODULES ONLY); CHECK YOUR MODULE!

SSM15G, SSM30G, SSH1002, ESH1012

RPM0010	TRIAC DRIVER U5
RPM0012	OPTOCOUPLER U6 & U7
RPM0013	OPERATIONAL AMPLIFIER U2
RPM0014	OPERATIONAL AMPLIFIER U8
RPM0015	SETPOINT POTENTIOMETER (FRONT PANEL)

SSM1501, SSM1502, SSM3002, SSH1011, SSH1012, ESH1012

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

TAS0501, TAS0502, TAS0511, TAS0512

RPM0025	BEEPER
RPM0026	TRANSFORMER
RPM0028	SWITCH STANDBY HEAT (TAS0501, TAS0502, ONLY) & ALARM (ALL UNITS) (FRONT PANEL)
RPM0057	ROTARY SWITCH FOR OFF, STANDBY HEAT, NORMAL, BOOST (TAS0511, TAS0512, ONLY)
RPM0058	KNOB FOR RPM0057
RPM0029	RECEPTACLE CONNECTOR FOR FRONT PANEL
RPM0030	MATING CONNECTOR (PLUG) FOR RPM0029
RPM0031	PINS FOR RPM0030
RPM0032	SOCKETS FOR RPM0029
RPM0033	RELAY #1 - ALARM OUTPUT CONNECTOR
RPM0034	RELAY #2 - BEEPER CONTACTS

Input Power Wiring Diagrams (Option A)

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

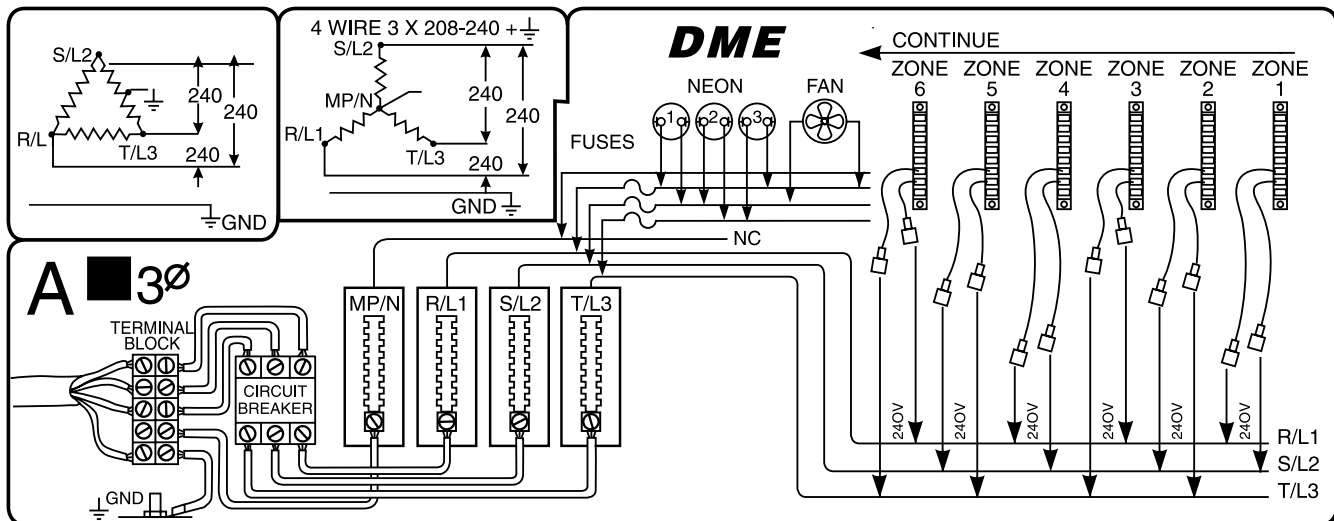
Page 149: (OPTION B) 380-415 VAC, 3-phase, 5-wire

Page 150: (OPTION C) 240 VAC, 2-phase, 4-wire

(OPTION D) 208-240 VAC, single phase, 3-wire 120 VAC, 2-phase, 4-wire

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

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

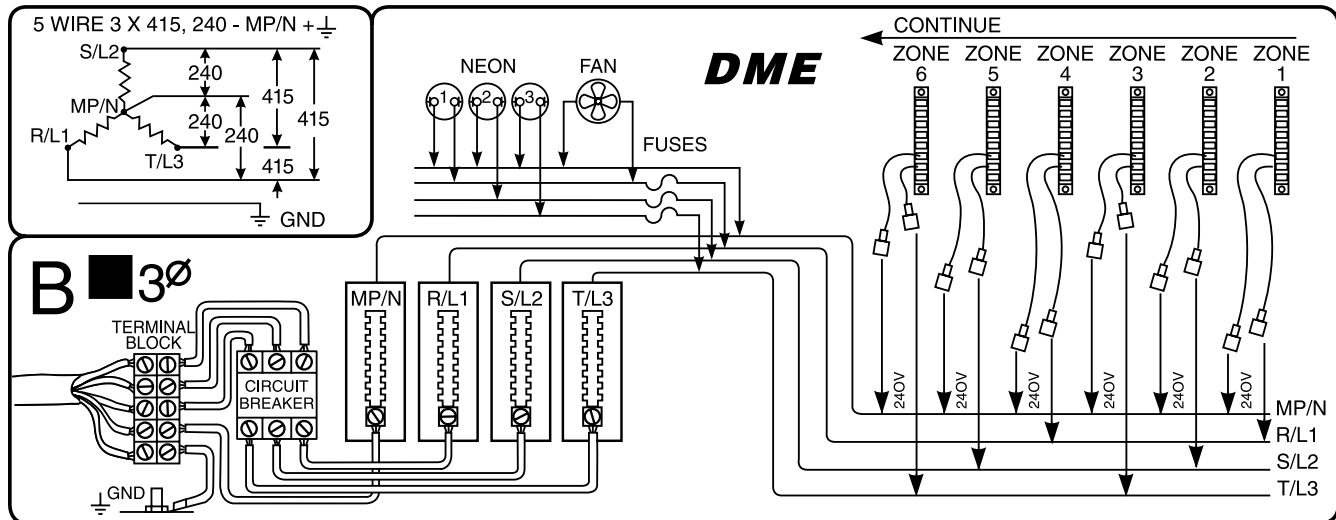


As shown above, each module is powered from one of the three phases. Zone (1), for example, is powered from Phase 1, which is supplied by R/L1 and S/L2. Zone (2) is powered by Phase 2, which is supplied by S/L2 and T/L3. Zone (3) is powered by Phase 3, which is supplied by R/L1 and T/L3.

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.

Input Power Wiring Diagrams (Option B)

OPTION B

380 – 415 VAC, Three-Phase, 5-Wire
"Y" Power Distribution System

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.

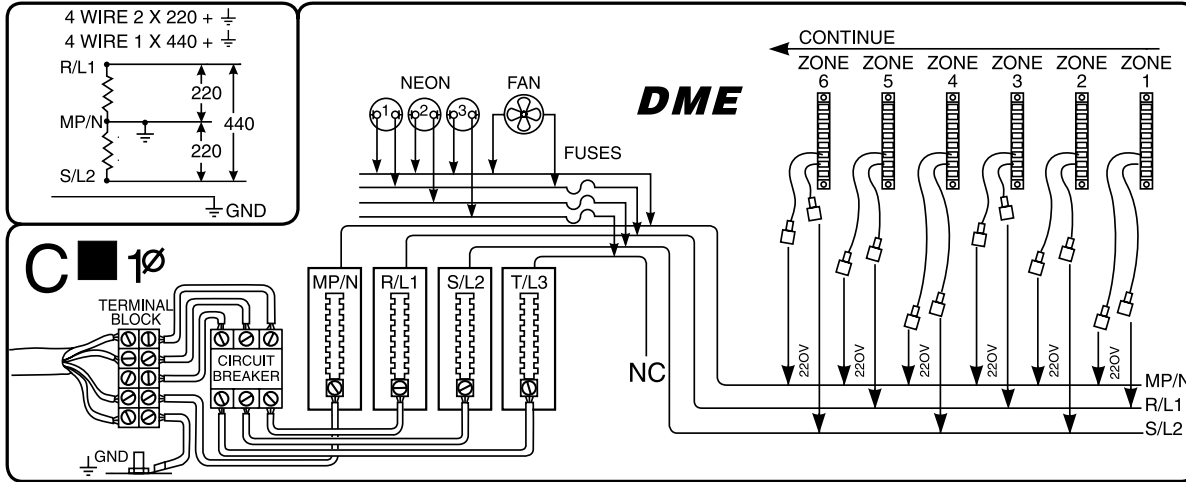
Please note that the 380-415 Volt Power Distribution System is the same as the "Y" connection shown in OPTION A except for the voltage levels and the use of the MP/N to develop the 240 volt from the 380-415 volt system. Notice that all modules have one line connected to MP/N and the other side connected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

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).

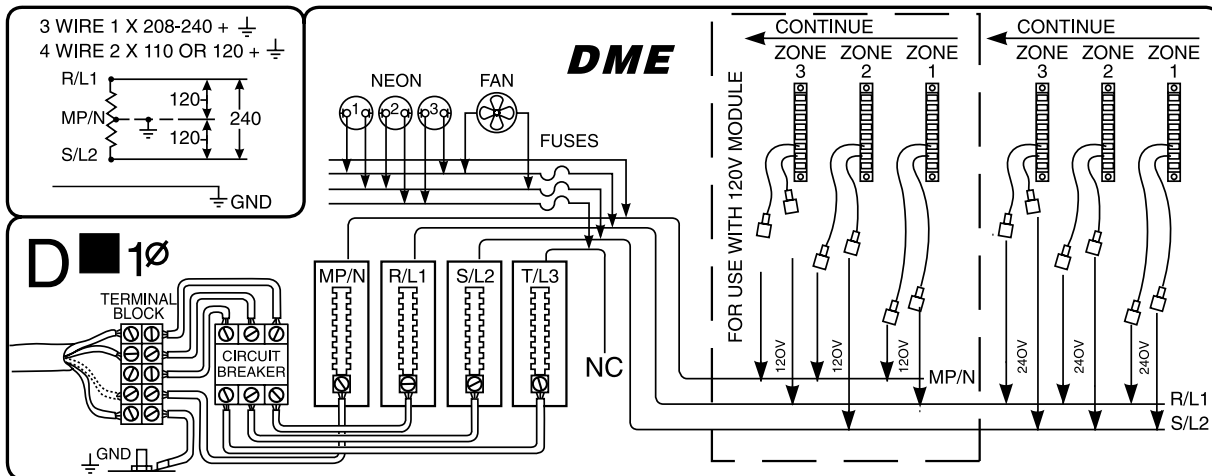
OPTION C 240 VAC, Two-Phase, 4-Wire



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.

Alternate Cable Configuration

Mold-Masters to DME Smart Series Conversion Cables



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)

Item Number	Mold Power Zones	Thermocouple Zones	Cable Length	Mainframe Connector	Mold Connector	Splits
PITC1210YFE	12	12	10'	DME "G" Series	HBE48 (Mold Master MPlug.12)	5 (Frame End)
PITC1220YFE			20'			
PITC1210YME			10'	HBE48 (Mold Master MPlug.12)	DME "G" Series	5 (Mold End)
PITC1220YME			20'			

Works with the following connectors:



PIC12G



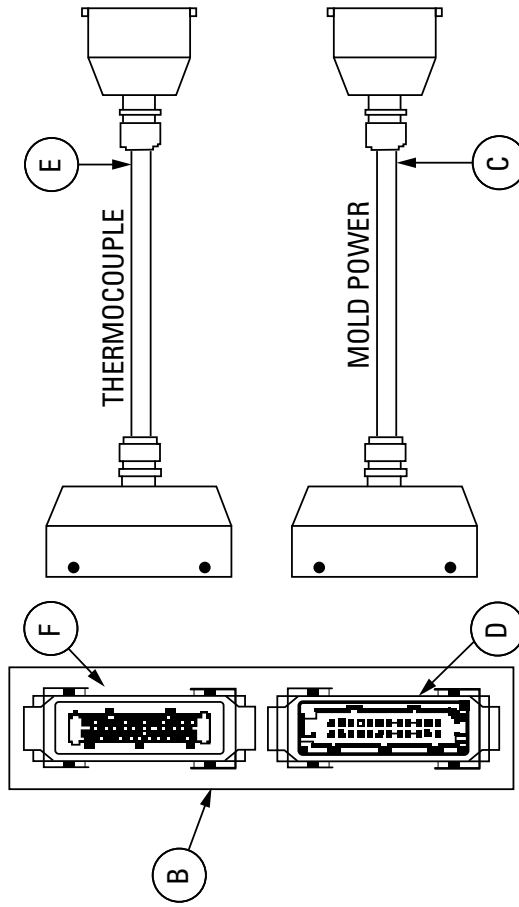
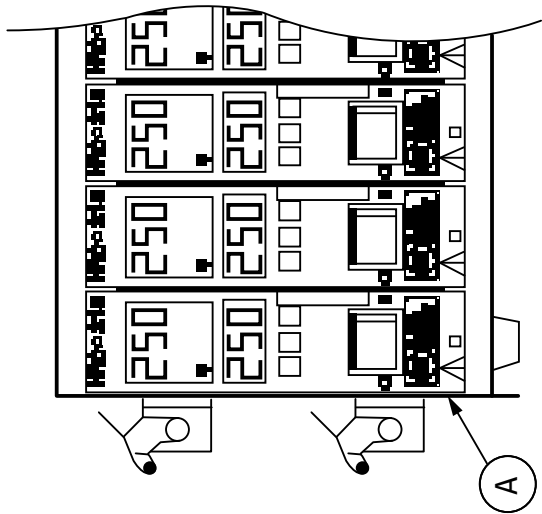
MTC12G



MPlug.12

Alternate Cable Configuration

HUSKY COMPATIBLE CONTROL SYSTEM COMPONENTS



5-ZONES OF CONTROL	
B	PTC05TB 5-ZONE TERMINAL MOUNTING BOX
C	MPC05C10 OR 20G 5-ZONE MOLD POWER CABLE; 10' OR 20' O.A.L.
D	PIC05 5-ZONE MOLD POWER INPUT CONNECTOR
E	TC05C10 OR 20G 5-ZONE THERMOCOUPLE CABLE; 10' OR 20' O.A.L.
F	MTC05 5-ZONE MOLD THERMOCOUPLE CONNECTOR

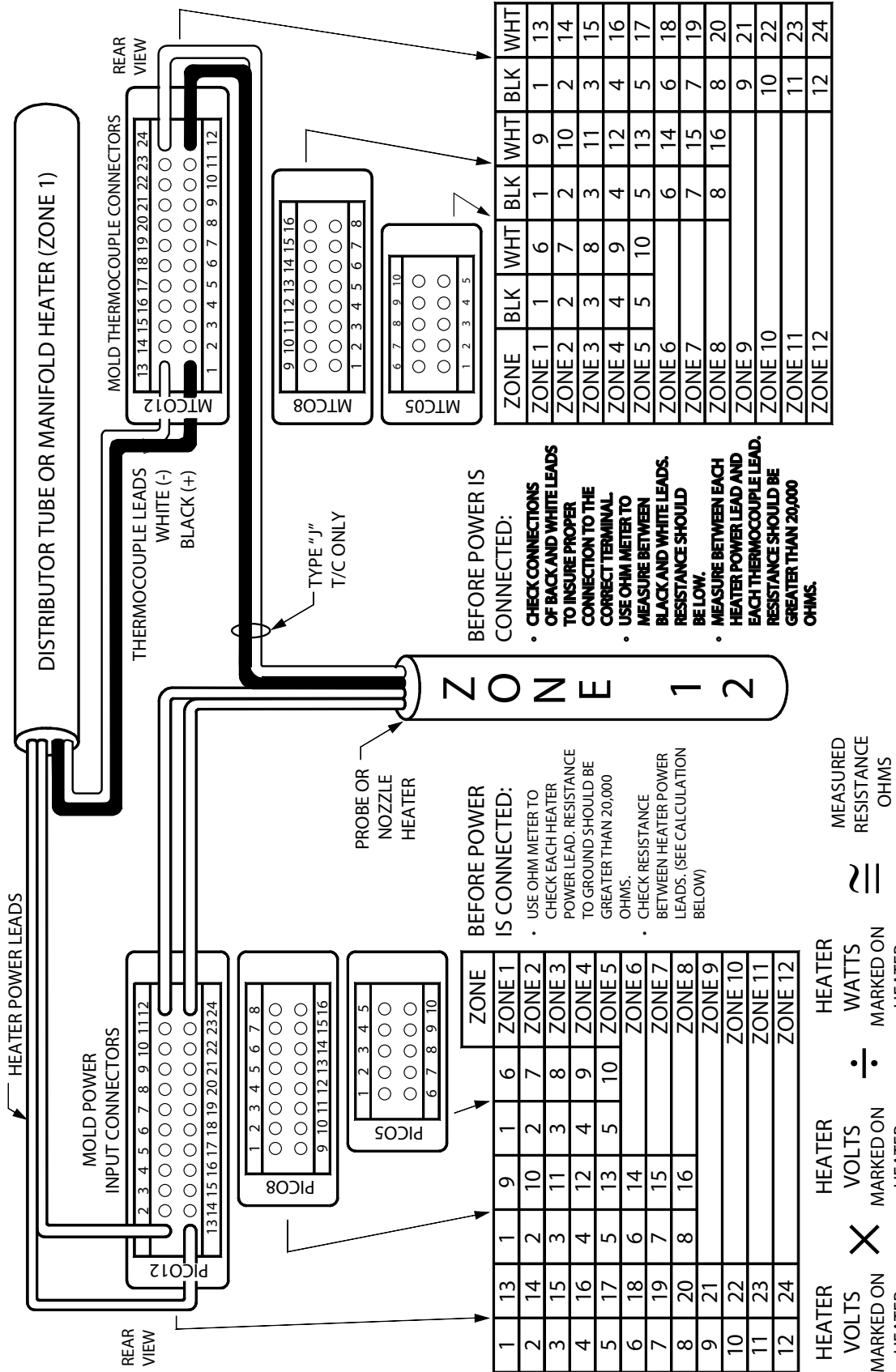
8-ZONES OF CONTROL	
B	PTC08TB 8-ZONE TERMINAL MOUNTING BOX
C	MPC08C10 OR 20G 8-ZONE MOLD POWER CABLE; 10' OR 20' O.A.L.
D	PIC08 8-ZONE MOLD POWER INPUT CONNECTOR
E	TC08C10 OR 20G 8-ZONE THERMOCOUPLE CABLE; 10' OR 20' O.A.L.
F	MTC08 8-ZONE MOLD THERMOCOUPLE CONNECTOR

12-ZONES OF CONTROL	
B	PTC012TB 12-ZONE TERMINAL MOUNTING BOX
C	MPC012C10 OR 20G 12-ZONE MOLD POWER CABLE; 10' OR 20' O.A.L.
D	PIC012 12-ZONE MOLD POWER INPUT CONNECTOR
E	TC012C10 OR 20G 12-ZONE THERMOCOUPLE CABLE; 10' OR 20' O.A.L.
F	MTC012 12-ZONE MOLD THERMOCOUPLE CONNECTOR

Husky is a trademark of Husky Injection Molding Systems

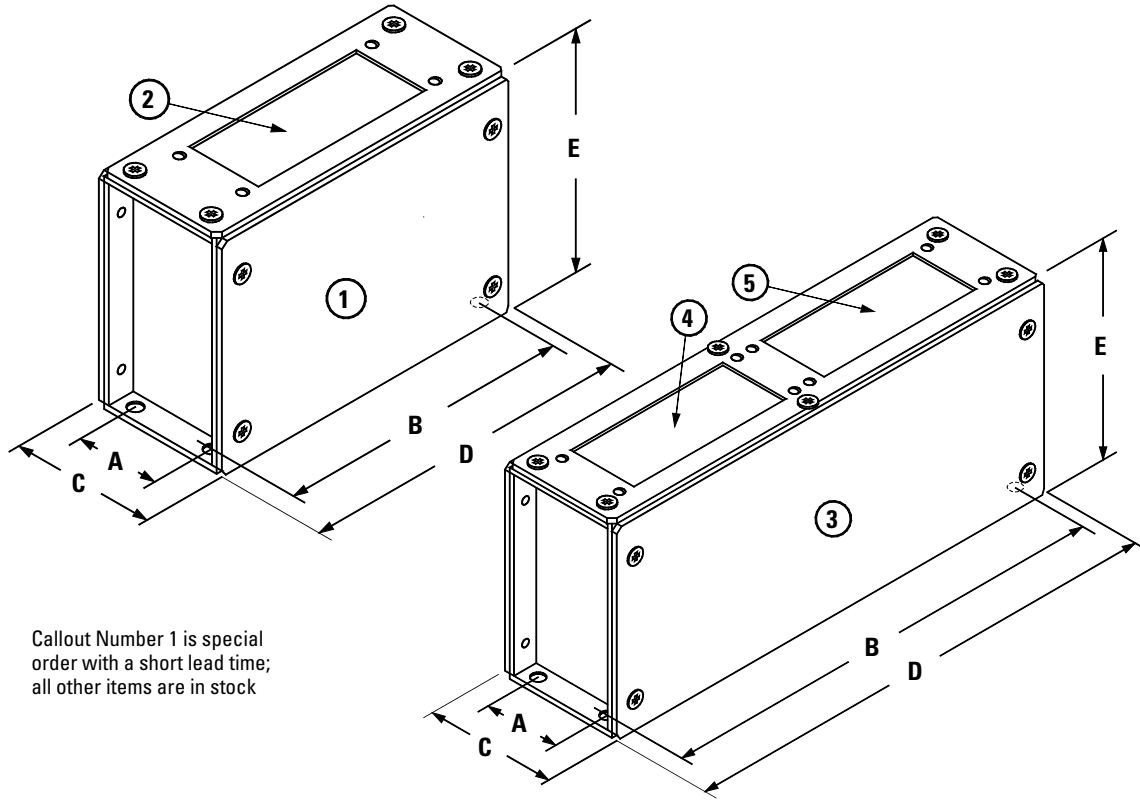
Alternate Cable Configuration

TYPICAL MOLD CONNECTOR WIRING DIAGRAM (REVISION "A")



Terminal Box Detail & Mold Connectors

EUROPEAN CONFIGURATION



Callout Number 1 is special order with a short lead time; all other items are in stock

CALLOUT NUMBER	ITEM NUMBER TERMINAL BOX	CALLOUT NUMBER	ITEM NUMBER MOLD CONNECTOR	DIMENSIONS									
				A		B		C		D		E	
1	PT05TB	2	PICO5	1.50"	38mm	4.25"	108mm	2.44"	62mm	4.88"	124mm	4.10"	104mm
1	PT05TB	2	MTC05	1.50"	38mm	4.25"	108mm	2.44"	62mm	4.88"	124mm	4.10"	104mm
1	PT08TB	2	PICO8	1.50"	38mm	4.99"	127mm	2.44"	62mm	5.61"	142mm	4.10"	104mm
1	PT08TB	2	MTC08	1.50"	38mm	4.99"	127mm	2.44"	62mm	5.61"	142mm	4.10"	104mm
1	PT012TB	2	PICO12	1.50"	38mm	6.05"	154mm	2.44"	62mm	6.68"	170mm	4.10"	104mm
1	PT012TB	2	MTC012	1.50"	38mm	6.05"	154mm	2.44"	62mm	6.68"	170mm	4.10"	104mm
3	PTC05TB	4	PICO5	1.50"	38mm	8.84"	225mm	2.44"	62mm	9.47"	241mm	4.10"	104mm
		5	MTC05	1.50"	38mm	8.84"	225mm	2.44"	62mm	9.47"	241mm	4.10"	104mm
3	PTC08TB	4	PICO8	1.50"	38mm	9.91"	252mm	2.44"	62mm	10.53"	267mm	4.10"	104mm
		5	MTC08	1.50"	38mm	9.91"	252mm	2.44"	62mm	10.53"	267mm	4.10"	104mm
3	PTC012TB	4	PICO12	1.50"	38mm	12.17"	309mm	2.44"	62mm	12.79"	325mm	4.10"	104mm
		5	MTC012	1.50"	38mm	12.17"	309mm	2.44"	62mm	12.79"	325mm	4.10"	104mm

NOTE: ALLOW AN ADDITIONAL 0.25" (10mm) IN HEIGHT AND WIDTH FOR SCREW HEAD CLEARANCE

DME Mainframe Stand Accessory – Cable Storage Basket

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



Smart Series 8-zone stand



Smart Series 12-zone stand

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



SVG P



SVG PC

ITEM NUMBER	DESCRIPTION	INCLUDES
SVGP2	2 ZONE PNEUMATIC	SVG12 HMI, 1-2 SOLENOID VALVE BANK
SVGP4	4 ZONE PNEUMATIC	SVG12 HMI, 1-4 SOLENOID VALVE BANK
SVGP6	6 ZONE PNEUMATIC	SVG12 HMI, 1-6 SOLENOID VALVE BANK
SVGP8	8 ZONE PNEUMATIC	SVG12 HMI, 1-8 SOLENOID VALVE BANK
SVGP12	12 ZONE PNEUMATIC	SVG12 HMI, 2-6 SOLENOID VALVE BANKS
SVGPC2	2 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-2 SOLENOID VALVE BANK
SVGPC4	4 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-4 SOLENOID VALVE BANK
SVGPC6	6 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-6 SOLENOID VALVE BANK
SVGPC8	8 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-8 SOLENOID VALVE BANK
SVGPC12	12 ZONE COMPACT PNEUMATIC	SVG12C HMI, 2-6 SOLENOID VALVE BANKS

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

Optional Accessories

ITEM NUMBER	DESCRIPTION
ITSPTROLLEY	STAND
PNEUPP	PNEUMATIC POWER PACK 500 PSI



Stand



Pneumatic Power pack

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



3L-1200 PSI / 3L-1600 PSI
Power pack



3L-600 PSI Power pack

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

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 Air Valve Assemblies and 4-Zone Timer

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.

ITEM NUMBER	DESCRIPTION
VCAP0400	4-STATION AIR VALVE ASSEMBLY
VCAP0600	6-STATION AIR VALVE ASSEMBLY
VCAP0800	8-STATION AIR VALVE ASSEMBLY
VCAP1000	10-STATION AIR VALVE ASSEMBLY
VCAP1200	12-STATION AIR VALVE ASSEMBLY

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.

ITEM NUMBER	DESCRIPTION
VCTB4000	4-ZONE PNEUMATIC HYDRAULIC CONTROLLER
VCPT0100	100-FT. LENGTH OF PNEUMATIC TUBING

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

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.

Technical Support

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.

PHASE A POWER		PHASE B POWER		PHASE C POWER	
ZONE #	WATTAGE	ZONE #	WATTAGE	ZONE #	WATTAGE
1		2		3	
4		5		6	
7		8		9	
10		11		12	
13		14		15	
16		17		18	
19		20		21	
22		23		24	
25		26		27	
28		29		30	
31		32		33	
34		35		36	
37		38		39	
40		41		42	
43		44		45	
46		47		48	
49		50		51	
52		53		54	
55		56		57	
58		59		60	
TOTAL PHASE A WATTS		TOTAL PHASE B WATTS		TOTAL PHASE C WATTS	

Record Product Breaker Size Phase Wattage Not To Exceed		Record Product Breaker Size Phase Wattage Not To Exceed		Record Product Breaker Size Phase Wattage Not To Exceed	
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Breaker Wattage Size Table – For Delta 240 VAC 3-Phase Power

BREAKER RATING AMPS	MAXIMUM PHASE WATTS EACH PHASE A,B,C CANNOT EXCEED THIS VALUE	MAXIMUM PHASE AMPS EACH PHASE A,B,C CANNOT EXCEED THIS VALUE
10 AMP	1,386 WATTS	5.77 AMPS
20 AMP	2,771 WATTS	11.55 AMPS
30 AMP	4,157 WATTS	17.32 AMPS
40 AMP	5,542 WATTS	23.09 AMPS
50 AMP	6,928 WATTS	28.87 AMPS
63 AMP	8,729 WATTS	36.27 AMPS
70 AMP	9,699 WATTS	40.41 AMPS
100 AMP	13,856 WATTS	57.74 AMPS

For 3 Phase Delta Power: TOTAL WATTS = SquareRoot (3) x VoltsAC x AMPS
 MAXIMUM PHASE WATTS = TOTAL WATTS / 3

Technical Support

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

