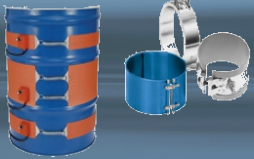


TEMPCO MEXICO, S.A. DE C.V.



CONDENSED LINE CATALOG

Panel Mount Controls • Embedded Mount Controllers • Power Controllers • Hot Runner Controls • Sensors



Athena Controls, Inc.

CONDENSED LINE CATALOG

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C-Series 16C Universal Temperature/Process Controller



The Athena 16C is a 1/16 DIN panel mounted, auto-tuning controller that can be used for precise control of a single loop with two independent outputs field-configurable as direct acting, reverse acting or alarm. RS-232 or RS-485 communications interfaces are available, and two digital LED displays provide visual indication of various controller functions.

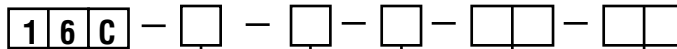
- ▲ Field-Configurable Universal Inputs
- ▲ User-Selectable Ramp to Setpoint
- ▲ 8-Level Ramp/Soak Control
- ▲ Bumpless Auto/Manual Transfer
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ Decimal Display in 0.1° for Measured Temperatures Under 1000° F or C
- ▲ On/Off Through Full PID Operation (P, PI, PD, PID)
- ▲ Adjustable Hysteresis and Deadband
- ▲ Outputs Configurable as Alarms
- ▲ Field-Configurable Process or Deviation Alarms; Latching or Non-Latching; Band and Inverse Band
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ UL, cUL, and CE Approvals
- ▲ Options Include Multi-Function Contact/Digital Input, Transducer Excitation, and Auxiliary Output
- ▲ Special and Custom Options Available
- ▲ DIN Rail Option



Range Information

| Input | Range | Input | Range |
|------------------------------|---|----------------------------|---|
| "B" | 32°F to 3308°F (0°C to 1820°C) | "R" | -58°F to 3214°F (-50°C to 1768°C) |
| "C" | 32°F to 4199°F (0°C to 2315°C) | "S" | -58°F to 3214°F (-50°C to 1768°C) |
| "E" | -238°F to 1832°F (-150°C to 1000°C) | "T" | -454°F to 752°F (-270°C to 400°C) |
| "J" | -328°F to 1400°F (-200°C to 760°C) | Platinel® II | -148°F to 2250°F (-100°C to 1232°C) |
| "K" | -454°F to 2462°F (-270°C to 1354°C) | 100 ohm RTD | -328°F to 1562°F (-200°C to 850°C) |
| "N" | -450°F to 2372°F (-268°C to 1300°C) | 100 ohm RTD (Decimal) | -328.0°F to 707.0°F (-200.0°C to 375.0°C) |
| "NNM" | 32°F to 2570°F (0°C to 1410°C) | Current Linear (Scaleable) | 4 to 20mA, 0 to 20mA |
| Millivolt Linear (Scaleable) | 0 to 50mV/10 to 50mV 0 to 10mV/0 to 50mV 0 to 100mV | Volt Linear (Scaleable) | 0 to 1V/0 to 5V 0 to 10V 0 to 5V |

Ordering Information



Input Calibration

| Code | Description |
|------|------------------|
| T | Thermocouple |
| R | RTD |
| S | Decimal RTD |
| B | TC and RTD |
| M | Millivolt Linear |
| V | Volt Linear |
| C | Current Linear |
| A | All |

Output 1

| Code | Description |
|------|--------------------------|
| 0 | None |
| B | Relay, N.O. |
| E | 0 to 20 mA |
| F | 4 to 20 mA (500 ohm max) |
| G | 4 to 20 mA (800 ohm max) |
| P | Pulsed 20 Vdc or 35 mA |
| S | Pulsed 20 Vdc or 17 mA |
| T | Solid-State Relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | Relay, N.C. |

Output 2

| Code | Description |
|------|--------------------------|
| 0 | None |
| B | Relay, N.O. |
| E | 0 to 20 mA |
| F | 4 to 20 mA (500 ohm max) |
| G | 4 to 20 mA (800 ohm max) |
| P | Pulsed 20 Vdc or 35 mA |
| S | Pulsed 20 Vdc or 17 mA |
| T | Solid-State Relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | Relay, N.C. |

Standard Options

| Code | Options | Code | Options |
|------|---------------------------|------|-----------------------|
| 00 | None | 40 | Switch Closed |
| 10 | Dual SSR, N.O. | 41 | Switch Open |
| 20 | Dual Open Collector | 42 | 5 V Input |
| 21 | Dual 24 Vdc | 45 | RS-485, No Switch |
| 22 | Dual SSR, N.C. | 46 | Switch Closed |
| 23 | Relay, N.O. | 47 | Switch Open |
| 30 | RS-232 (Athena+ Protocol) | 48 | 5 V Input |
| 31 | RS-485, No Switch | 49 | Transducer Excitation |
| 36 | Switch Closed | 50 | 10 Vdc |
| 37 | Switch Open | 51 | 12 Vdc |
| 38 | 5 V Input | 52 | 15 Vdc |
| | | 53 | 5 Vdc |
| | | 60 | 4 to 20 mA |
| | | 61 | 1 to 5 V |
| | | 62 | 0 to 20 mA |
| | | 63 | 0 to 5 V |

Special Options

| | |
|----|-----------------|
| 00 | None |
| | Consult Factory |



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Technical Specifications

Operating Limits

| | |
|---------------------|---|
| Ambient Temperature | 32°F to 131°F (0°C to 55°C) |
| Relative Humidity | |
| Tolerance | 90%, non-condensing |
| Power | 100-250 Vac 125 to 300 Vdc 24 Vac/dc optional |
| Power Consumption | Less than 6 VA (instrument) |

Performance

| | |
|-----------------------|---|
| Accuracy | ±0.20% of full scale (±0.10% typical), ±1 digit |
| Setpoint Resolution | 1.0 count / 0.1 count |
| Repeatability | ±1.0 count |
| Temperature Stability | 5 µV/°C (maximum) |
| TC Cold-End Tracking | 0.05°C/°C ambient |
| Noise Rejection | 100 dB common mode 70 dB series mode |
| Process Sampling | 10 Hz (100 ms) |
| Digital Filtering | Adjustable 0.1 to 10 sec |

Control Characteristics

| | |
|--------------------------|--|
| Setpoint Limits | Span of Sensor |
| Alarms | Adjustable for high/low; selectable for process or deviation |
| Proportional Band | 2 to span of sensor |
| Integral | 0 to 9600 sec |
| Derivative | 0 to 2400 sec |
| Cycle Time | 0.2 to 120 sec |
| Control Hysteresis | 1 to span of sensor |
| Dead Band (Output 1 & 2) | Range of Sensor |
| Ramp to Setpoint | 1 to 9999 min |
| Auto-Tune | Operator initiated from front panel |
| Manual Control | Operator initiated from front panel |

Inputs

| | |
|--------------|---|
| Thermocouple | B, C, E, J, K, N, NNM, R, S, T, Platine II Maximum lead resistance 100 ohms for rated accuracy |
| RTD | Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385) |
| Linear | 0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V |

Outputs

| | |
|---|--|
| B | 5 A/3 A (120/240 Vac), normally open |
| E | 0-20 mA |
| F | 4-20 mA, full output to load 500 ohm impedance, max. |
| G | 4-20 mA, full output to load 800 ohm impedance, max. |

Outputs

| | |
|---|--|
| P | 20 Vdc or 35 mA |
| S | 20 Vdc or 17 mA |
| T | 1 A, Solid-state relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | 5 A/3 A (120/240 Vac), normal closed relay |

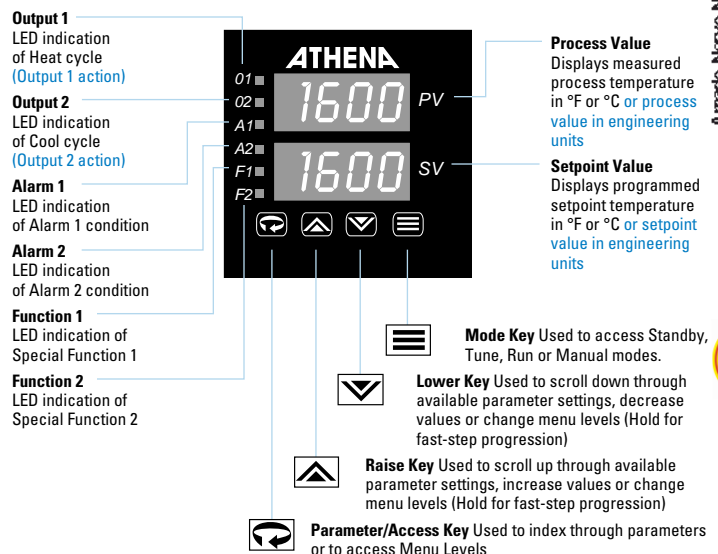
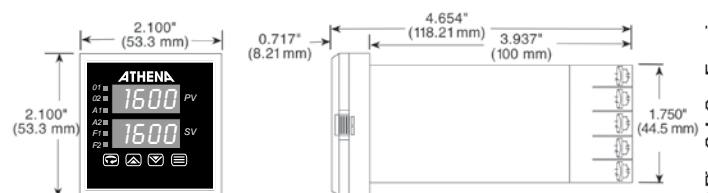
Alarm Type

| | |
|----|---|
| 10 | Dual SSR: Alarm 1: 24-240 Vac, 1 A Alarm 2: 24 Vac Only |
| 20 | Dual Open collector, 24 V, 20 milliamps |
| 21 | Dual 24 V, 20 mA |
| 22 | Dual SSR: Alarm 1: NC, 24-240 Vac, 1 A Alarm 2: 24 Vac Only |
| 23 | 5 A/3 A (120/240 Vac), mechanical relay |

Mechanical Characteristics

| | |
|--------------------|--|
| Display | Dual, 4-digit 0.36" (9.2 mm) LED display Process Value: Orange Setpoint Value: Green |
| Numeric Range | -1999 to 9999 |
| Front-Panel Rating | NEMA 4X (IP65) |
| Front-Panel Cutout | 1.771" x 1.771" (45 mm x 45 mm) |
| Connections | Screw Terminals |

Specifications subject to change without notice.



C-Series 18C and 19C Universal Temperature/Process Controllers



The Athena 18C and 19C are available as 1/8 DIN (18C) vertical or 1/8 DIN (19C) horizontal models. Both panel mounted, auto-tuning controllers can be used for precise control of a single loop with two independent outputs field-configurable as direct acting, reverse acting, and 2 alarms. RS-232 or RS-485 communications interfaces are available for both models, and two digital LED displays provide visual indication of various controller functions.

- ▲ Field-Configurable Universal Inputs
- ▲ User-Selectable Ramp to Setpoint
- ▲ 8-Level Ramp/Soak Control
- ▲ Bumpless Auto/Manual Transfer
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ Decimal Display in 0.1° for Measured Temperatures Under 1000° F or C
- ▲ On/Off through Full PID Operation (P, PI, PD, PID)
- ▲ Adjustable Hysteresis and Deadband
- ▲ Outputs Configurable as Alarms
- ▲ Field-Configurable Process or Deviation Alarms; Latching or Non-Latching; Band and Inverse Band
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ UL, cUL, and CE Approvals
- ▲ Options Include Remote Analog Setpoint, Multi-Function Contact/Digital Input, Transducer Excitation, and Auxiliary Output
- ▲ Special and Custom Options Available

Range Information



| Input | Range | Input | Range |
|------------------------------|---|----------------------------|---|
| "B" | 32°F to 3308°F (0°C to 1820°C) | "R" | -58°F to 3214°F (-50°C to 1768°C) |
| "C" | 32°F to 4199°F (0°C to 2315°C) | "S" | -58°F to 3214°F (-50°C to 1768°C) |
| "E" | -238°F to 1832°F (-150°C to 1000°C) | "T" | -454°F to 752°F (-270°C to 400°C) |
| "J" | -328°F to 1400°F (-200°C to 760°C) | Platinel® II | -148°F to 2250°F (-100°C to 1232°C) |
| "K" | -454°F to 2462°F (-270°C to 1354°C) | 100 ohm RTD | -328°F to 1562°F (-200°C to 850°C) |
| "N" | -450°F to 2372°F (-268°C to 1300°C) | 100 ohm RTD (Decimal) | -328.0°F to 707.0°F (-200.0°C to 375.0°C) |
| "NNM" | 32°F to 2570°F (0°C to 1410°C) | Current Linear (Scaleable) | 4 to 20mA, 0 to 20mA |
| Millivolt Linear (Scaleable) | 0 to 50mV/10 to 50mV 0 to 10mV/0 to 50mV 0 to 100mV | Volt Linear (Scaleable) | 0 to 1V/0 to 5V 0 to 10V 0 to 5V |

Ordering Information

1 8 C 1 9 C

Input Calibration Code

T = Thermocouple
R = RTD
S = Decimal RTD
B = TC and RTD
M = Millivolt Linear
V = Volt Linear
C = Current Linear
A = All

Output 1 Code

O = None
B = Relay, N.O.
C = Relay, N.O. w/o snubber
D = 0 to 7 mA
E = 0 to 20 mA
F = 4 to 20 mA (500 ohm max)
G = 4 to 20 mA (800 ohm max)
P = Pulsed 20 Vdc or 35 mA
S = Pulsed 20 Vdc or 17 mA
T = Solid-State Relay
V = 0 to 5 Vdc
X = 0 to 10 Vdc
Y = Relay, N.C.

Output 2 Code

O = None
B = Relay, N.O.
C = Relay, N.O. w/o snubber
D = 0 to 7 mA
E = 0 to 20 mA
F = 4 to 20 mA (500 ohm max)
G = 4 to 20 mA (800 ohm max)
P = Pulsed 20 Vdc or 35 mA
S = Pulsed 20 Vdc or 17 mA
T = Solid-State Relay
V = 0 to 5 Vdc
X = 0 to 10 Vdc
Y = Relay, N.C.

Alarm 1 Code

O = None
B = Relay, N.O.
S = 24 V
T = Solid -State Relay

Alarm 2 Code

O = None
B = Relay, N.O.
S = 24 V
T = Solid -State Relay

Communications Code

O = None
A = RS-232
B = RS-485
E = RS-485 Modbus

Option 1 Code

Aux Output/PV Retransmit
PA = 4 to 20 mA
PB = 1 to 5 V
PC = 0 to 20 mA
PD = 0 to 5 V
Remote Analog Setpoint
SA = 0 to 5 Vdc w/ switch
SB = 1 to 5 Vdc w/ switch
SC = 0 to 20 mA w/ switch
SD = 4 to 20 mA w/ switch
SE = Switch only
SF = 1 to 10 Vdc w/ switch

Option 2 Code

O = None
Transducer Excitation
1 = 10 Vdc
2 = 12 Vdc
3 = 15 Vdc
4 = 5 Vdc

Special Options

00 = None
Consult Factory



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<http://www.tempco-mexico.com>



C-Series 18C and 19C Universal Temperature/Process Controllers

Technical Specifications

Operating Limits

| | |
|-----------------------------|--|
| Ambient Temperature | 32°F to 131°F (0°C to 55°C) |
| Relative Humidity Tolerance | 90%, non-condensing |
| Line Voltage | 100 to 250 Vac 125 to 300 Vdc 24 Vac/dc optional |
| Power Consumption | Less than 6 VA (instrument) |

Performance

| | |
|-----------------------|---|
| Accuracy | ±0.20% of full scale (±0.10% typical), ±1 digit |
| Setpoint Resolution | 1 count / 0.1 count |
| Repeatability | ±1 count |
| Temperature Stability | 5 µV/°C (maximum) |
| TC Cold-End Tracking | 0.05°C/°C ambient |
| Noise Rejection | 100 dB common mode 70 dB series mode |
| Process Sampling | 10 Hz (100 ms) |
| Digital Filtering | Adjustable 0.1 to 10 |

Control Characteristics

| | |
|--------------------------|--|
| Setpoint Limits | Span of Sensor |
| Alarms | Adjustable for high/low; selectable process or deviation |
| Proportional Band | 2 to span of sensor |
| Integral | 0 to 9600 sec |
| Derivative | 0 to 2400 sec |
| Cycle Time | 0.2 to 120 sec |
| Control Hysteresis | 1 to span of sensor |
| Dead Band (Output 1 & 2) | Range of sensor |
| Ramp to Setpoint | 1 to 9999 min |
| Auto-Tune | Operator initiated from front panel |
| Manual Control | Operator initiated from front panel |

Inputs

| | |
|--------------|---|
| Thermocouple | B, C, E, J, K, N, NNM, R, S, T, Platinel II Maximum lead resistance, 100 ohms for rated accuracy |
| RTD | Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385) |
| Linear | 0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V |

Outputs

| | |
|---|--|
| B | 5 A/3 A (120/240 Vac) normally open |
| C | 5 A/3 A (120/240 Vac) normally open w/o snubber |
| D | 0 - 7 mA |
| E | 0-20 mA |
| F | 4-20 mA, full output to load 500 ohm impedance max |
| G | 4-20 mA, full output to load 800 ohm impedance max |
| P | 20 Vdc or 35 mA |
| S | 20 Vdc or 17 mA |

| | |
|---|------------------------|
| T | 1 A, Solid-state relay |
|---|------------------------|

Outputs

| | |
|---|----------------------------|
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | 1 A, normally closed relay |

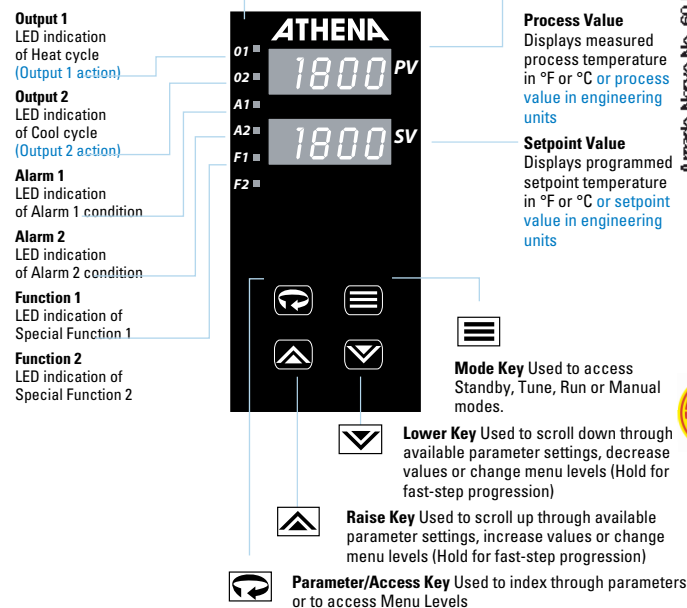
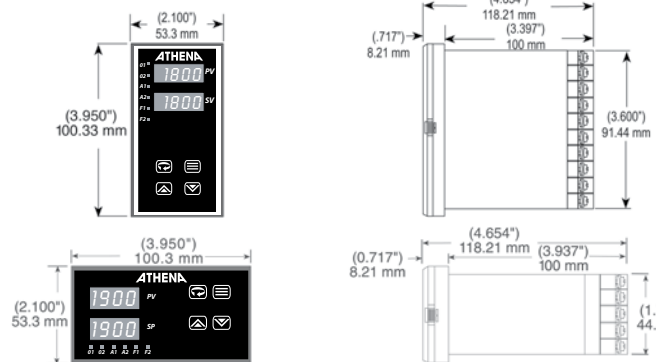
Alarm Outputs

| | |
|---|---|
| B | 5 A/3 A (120/240 Vac), mechanical relay |
| S | 24 V, 20 mA |
| T | SSR, NC, 24-240 Vac |

Mechanical Characteristics

| | |
|--------------------|--|
| Display | Dual, 4-digit 0.36" (9.2 mm) LED display Process Value: Orange Setpoint Value: Green |
| Numeric Range | -1999 to 9999 |
| Front Panel Rating | NEMA 4X (IP65) |
| Front Panel Cutout | 3.622" x 1.771" (92 mm x 45 mm) |
| Connections | Screw terminals |

Specifications subject to change without notice.



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C-Series 25C Universal Temperature/Process Controller



The Athena 25C is a 1/4 DIN panel mounted, auto-tuning controller that can be used for precise control of a single loop with two independent outputs field-configurable as direct acting, reverse acting, and 2 alarms. RS-232 or RS-485 communications interfaces are available, and two digital LED displays provide visual indication of various controller functions.

- ▲ Field-Configurable Universal Inputs
- ▲ User-Selectable Ramp to Setpoint
- ▲ 8-Level Ramp/Soak Control
- ▲ Bumpless Auto/Manual Transfer
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ Decimal Display in 0.1° for Measured Temperatures Under 1000° F or C
- ▲ On/Off through Full PID Operation (P, PI, PD, PID)
- ▲ Adjustable Hysteresis and Deadband
- ▲ Outputs Configurable as Alarms
- ▲ Field-Configurable Process or Deviation Alarms; Latching or Non-Latching; Band and Inverse Band
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ UL, cUL, and CE Approvals
- ▲ Options Include Remote Analog Setpoint, Multi-Function Contact/Digital Input, Transducer Excitation, and Auxiliary Output
- ▲ Special and Custom Options Available

Range Information



| Input | Range | Input | Range |
|------------------------------|---|----------------------------|---|
| "B" | 32°F to 3308°F (0°C to 1820°C) | "R" | -58°F to 3214°F (-50°C to 1768°C) |
| "C" | 32°F to 4199°F (0°C to 2315°C) | "S" | -58°F to 3214°F (-50°C to 1768°C) |
| "E" | -238°F to 1832°F (-150°C to 1000°C) | "T" | -454°F to 752°F (-270°C to 400°C) |
| "J" | -328°F to 1400°F (-200°C to 760°C) | Platinel® II | -148°F to 2250°F (-100°C to 1232°C) |
| "K" | -454°F to 2462°F (-270°C to 1354°C) | 100 ohm RTD | -328°F to 1562°F (-200°C to 850°C) |
| "N" | -450°F to 2372°F (-268°C to 1300°C) | 100 ohm RTD (Decimal) | -328.0°F to 707.0°F (-200.0°C to 375.0°C) |
| "NNM" | 32°F to 2570°F (0°C to 1410°C) | Current Linear (Scaleable) | 4 to 20mA, 0 to 20mA |
| Millivolt Linear (Scaleable) | 0 to 50mV/10 to 50mV 0 to 10mV/0 to 50mV 0 to 100mV | Volt Linear (Scaleable) | 0 to 1V/0 to 5V 0 to 10V 0 to 5V |

Ordering Information

2 5 C — [] — [] — [] — [] — [] — [] — [] — [] — [] — []

| | | | | | | | | |
|---|--|--|---|---|---|--|--|--|
| Input Calibration Code T = Thermocouple R = RTD S = Decimal RTD B = TC and RTD M = Millivolt Linear V = Volt Linear C = Current Linear A = All | Output 1 Code 0 = None B = Relay, N.O. E = 0 to 20 mA F = 4 to 20 mA (500 ohm max) G = 4 to 20 mA (800 ohm max) P = Pulsed 20 Vdc or 35 mA S = Pulsed 20 Vdc or 17 mA T = Solid-State Relay V = 0 to 5 Vdc X = 0 to 10 Vdc Y = Relay, N.C. | Output 2 Code 0 = None B = Relay, N.O. E = 0 to 20 mA F = 4 to 20 mA (500 ohm max) G = 4 to 20 mA (800 ohm max) P = Pulsed 20 Vdc or 35 mA S = Pulsed 20 Vdc or 17 mA T = Solid-State Relay V = 0 to 5 Vdc X = 0 to 10 Vdc Y = Relay, N.C. | Alarm 1 Code 0 = None B = Relay, N.O. S = 24 V T = Solid-State Relay | Alarm 2 Code 0 = None B = Relay, N.O. S = 24 V T = Solid-State Relay | Communications Code 0 = None A = RS-232 B = RS-485 E = RS-485 Modbus | Option 1 Code Aux Output/PV Retransmit PA = 4 to 20 mA PB = 1 to 5 V PC = 0 to 20 mA PD = 0 to 5 V Remote Analog Setpoint SA = 0 to 5 Vdc w/ switch SB = 1 to 5 Vdc w/ switch SC = 0 to 20 mA w/ switch SD = 4 to 20 mA w/ switch SE = Switch only SF = 0 to 10 Vdc w/ switch | Option 2 Code 0 = None Transducer Excitation 1 = 10 Vdc 2 = 12 Vdc 3 = 15 Vdc 4 = 5 Vdc | Special Options 00 = None Consult Factory |
|---|--|--|---|---|---|--|--|--|



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TEMPCO México, S.A. de C.V.



Technical Specifications

Operating Limits

| | |
|-----------------------------|--|
| Ambient Temperature | 32°F to 131°F (0°C to 55°C) |
| Relative Humidity Tolerance | 90%, non-condensing |
| Line Voltage | 100 to 250 Vac 125 to 300 Vdc 24 Vac/dc optional |
| Power Consumption | Less than 6 VA (instrument) |

Performance

| | |
|-----------------------|---|
| Accuracy | ±0.20% of full scale (±0.10% typical), ±1 digit |
| Setpoint Resolution | 1 count / 0.1 count |
| Repeatability | ±1 count |
| Temperature Stability | 5 µV/°C (maximum) |
| TC Cold-End Tracking | 0.05°C/°C ambient |
| Noise Rejection | 100 dB common mode 70 dB series mode |
| Process Sampling | 10 Hz (100 ms) |
| Digital Filtering | Adjustable 0.1 to 10 |

Control Characteristics

| | |
|--------------------------|---|
| Setpoint Limits | Span of Sensor |
| Alarms | Adjustable for high/low; selectable process, or deviation |
| Proportional Band | 2 to span of sensor |
| Integral | 0 to 9600 sec |
| Derivative | 0 to 2400 sec |
| Cycle Time | 0.2 to 120 sec |
| Control Hysteresis | 1 to span of sensor |
| Dead Band (Output 1 & 2) | Range of sensor |
| Ramp to Setpoint | 1 to 9999 min |
| Auto-Tune | Operator initiated from front panel |
| Manual Control | Operator initiated from front panel |

Inputs

| | |
|--------------|--|
| Thermocouple | B, C, E, J, K, N, NNM, R, S, T, Platine I II Maximum lead resistance, 100 ohms for rated accuracy |
| RTD | Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385) |
| Linear | 0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V |

Outputs

| | |
|---|--|
| B | 5 A/3 A (120/240 Vac) normally open |
| E | 0-20 mA |
| F | 4-20 mA, full output to load 500 ohm impedance max |
| G | 4-20 mA, full output to load 800 ohm impedance max |
| P | 20 Vdc or 35 mA |

S 20 Vdc or 17 mA

Outputs

| | |
|---|----------------------------|
| T | 1 A, Solid-state relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | 1 A, normally closed relay |

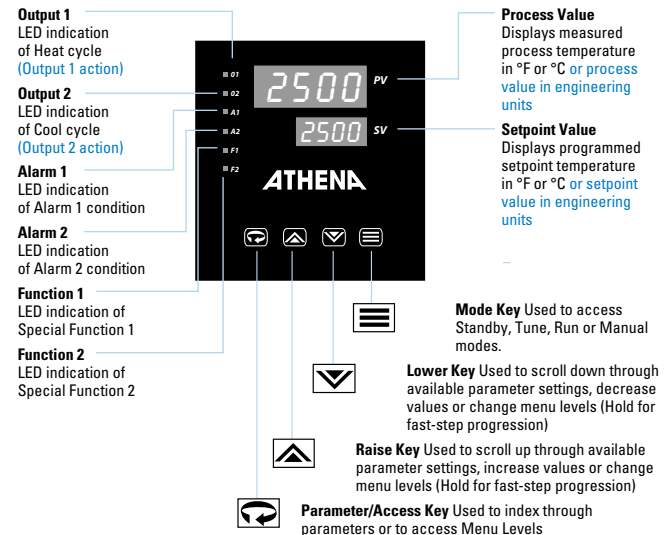
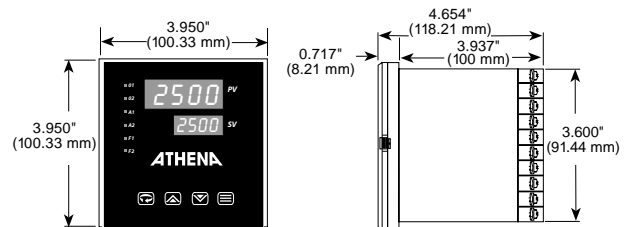
Alarm Outputs

| | |
|---|---|
| B | 5 A/3 A (120/240 Vac), mechanical relay |
| S | 24 V, 20 mA |
| T | SSR, NC, 24-240 Vac |

Mechanical Characteristics

| | |
|--------------------|--|
| Display | Dual, 4-digit 0.36" (9.2 mm) LED display Process Value: Orange Setpoint Value: Green |
| Numeric Range | -1999 to 9999 |
| Front Panel Rating | NEMA 4X (IP65) |
| Front Panel Cutout | 3.622" x 3.622" (92 mm x 92 mm) |
| Connections | Screw terminals |

Specifications subject to change without notice.



Legacy Series 16 Universal Temperature/Process Controller



- ▲ User-Selectable Ramp to Setpoint
- ▲ Bumpless Auto/Manual Transfer
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ On/Off through Full PID Operation (P,PI,PD,PID)
- ▲ Auto-Tuning, Heat or Cool
- ▲ Adjustable Hysteresis & Heat/Cool Spread
- ▲ Field-Configurable Process, Deviation, or Latching or Non-Latching Alarms
- ▲ Remote Setpoint Select Option
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ Optional Process Variable Retransmission
- ▲ DIN Rail Option
- ▲ cUL and CE Approvals

The Athena Legacy 16 is a 1/16 DIN panel mounted, auto-tuning controller that can be used for precise control of a single loop with two independent outputs. The controller accepts thermocouple, RTD, voltage, or current input. RS-232 or RS-485 communications are available, and two digital LED displays provide visual indication of various controller functions.



Ordering Information

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| Input | Range | Code |
|--------------|--------------------|------|
| "E" TC | 0 to 1292° F | EF |
| "E" TC | -18 to 700° C | EC |
| "J" TC | 0 to 1400° F | JF |
| "J" TC | 0 to 750° C | JC |
| "K" TC | 0 to 2460° F | KF |
| "K" TC | 0 to 1349° C | KC |
| "N" TC | 0 to 2370° F | NF |
| "N" TC | 0 to 1300° C | NC |
| "R" TC | 0 to 3200° F | RF |
| "R" TC | 0 to 1750° C | RC |
| "S" TC | 0 to 3200° F | SF |
| "S" TC | 0 to 1750° C | SC |
| "T" TC | -200 to 600° F | TF |
| "T" TC | -100 to 300° C | TC |
| 100 ohm RTD | -328 to 1562° F | PF |
| 100 ohm RTD | -200 to 850° C | PC |
| 100 ohm RTD | -199.0 to 450.0° F | DF |
| 100 ohm RTD | -100.0 to 225.0° C | DC |
| 1000 ohm RTD | -328 to 1562° F | XF |
| 1000 ohm RTD | -200 to 850° C | XC |
| 1000 ohm RTD | -199.0 to 450.0° F | ZF |
| 1000 ohm RTD | -100.0 to 225.0° C | ZC |
| 1 to 5 V | Scaleable | L1 |
| 0 to 5 V | Scaleable | L4 |
| 10 to 50 mV | Scaleable | L2 |
| 0 to 50 mV | Scaleable | L5 |
| 4 to 20 mA* | Scaleable | L3 |
| 0 to 20 mA* | Scaleable | L6 |
| 0 to 10 Vdc | Scaleable | L7 |
| 2 to 10 Vdc | Scaleable | L8 |
| 0 to 1 Vdc | Scaleable | L9 |

Output 1 (Heating)

Configuration

Code

0 = None
 B = Relay, N.O.
 E = 0 to 20 mA
 F = 4 to 20 mA (500 ohm max)
 G = 4 to 20 mA (800 ohm max)
 P = Pulsed 20 Vdc or 35 mA
 S = Pulsed 20 Vdc or 17 mA
 T = Solid-State Relay
 V = 0 to 5 Vdc
 X = 0 to 10 Vdc
 Y = Relay, N.C.

Output 2 (Cooling)

Configuration

Code

0 = None
 B = Relay, N.O.
 E = 0 to 20 mA
 F = 4 to 20 mA (500 ohm max)
 G = 4 to 20 mA (800 ohm max)
 P = Pulsed 20 Vdc or 35 mA
 S = Pulsed 20 Vdc or 17 mA
 T = Solid-State Relay
 V = 0 to 5 Vdc
 X = 0 to 10 Vdc
 Y = Relay, N.C.

Standard Options

| Code | Options |
|--|-----------------------------|
| 00 | = None |
| Alarms | |
| 10 | = Dual SSR, N.O. Collector |
| 20 | = Dual Open Collector |
| 21 | = Dual 24 Vdc |
| 22 | = Dual SSR, N.C. |
| 23 | = Relay, N.O. |
| Communications | |
| 30 | = RS-232 (Athena+ Protocol) |
| Communication, RS-485 Athena+ Protocol w/Contact/Digital Input | |
| 31 | = RS-485, No Switch |
| 36 | = Switch Closed |
| 37 | = Switch Open |
| 38 | = 5 V Input |
| Digital Input w/Alarm | |
| 40 | = Switch Closed |
| 41 | = Switch Open |
| 42 | = 5 V Input |
| Communication RS-485 Modbus® | |
| Protocol w/Contact/Digital Input | |
| 45 | = RS-485, No Switch |
| 46 | = Switch Closed |
| 47 | = Switch Open |
| 48 | = 5 V Input |
| Transducer Excitation | |
| 50 | = 10 Vdc |
| 51 | = 12 Vdc |
| 52 | = 15 Vdc |
| 53 | = 5 Vdc |
| Aux Output/PV Retransmit | |
| 60 | = 4 to 20 mA |
| 61 | = 1 to 5 V |
| 62 | = 0 to 20 mA |
| 63 | = 0 to 5 V |

Special Options

00 = None
 Consult Factory

*Milliamp ranges are available with 2.52 ohm resistor (supplied).



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Technical Specifications

Operating Limits

| | |
|-----------------------------|--|
| Ambient Temperature | 32°F to 131°F (0°C to 55°C) |
| Relative Humidity Tolerance | 90% non-condensing |
| Line Voltage | 100 to 250 Vac 125 to 300 Vdc 24 Vac/dc optional |
| Power Consumption | Less than 6 VA (instrument) |

Performance

| | |
|-----------------------|--|
| Accuracy | ±0.20% of full scale (± 0.10% typical), ± 1 digit |
| Setpoint Resolution | 1 count/0.1 count |
| Repeatability | ±1.0 count |
| Temperature Stability | 5 mV/°C maximum |
| TC Cold End Tracking | 0.05°C/°C ambient |
| Noise Rejection | 100 dB common mode 70 dB series mode |
| Process Sampling | 10 Hz (100 ms) |
| Digital Filtering | Adjustable 0.1 to 10 |

Control Characteristics

| | |
|--------------------|--|
| Setpoint Limits | Span of Sensor |
| Alarms | Adjustable for high/low; selectable for process or deviation |
| Rate | 0 to 900 sec |
| Reset | 0 to 2400 sec |
| Cycle Time | 0=200 ms; 1-120 sec |
| Gain | 0 to 400 |
| Gain Ratio | 0 to 2.0 (in 0.1 increments) |
| Control Hysteresis | 1 to 100 (on/off configuration) |
| Spread (Output 2) | 0 to 100 (above setpoint) |
| Ramp to Setpoint | 0 to 100 min |
| Auto-Tune | Operator initiated from front panel |
| Manual Control | Operator initiated from front panel |

Inputs

| | |
|--------------|--|
| Thermocouple | B, C, E, J, K, N, NNM, R, S, T, Platine II Maximum lead resistance, 100 ohms for rated accuracy |
| RTD | Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385) |
| Linear | 0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V |

Outputs

| | |
|-----------------------------|--|
| #1 Reverse-acting (Heating) | |
| #2 Direct-acting (Cooling) | |
| B | 5 A / 3 A (120/240 Vac), normally open |
| E | 0-20 mA |
| F | 4-20 mA, full output to load 500 ohm impedance max |

Outputs

| | |
|---|---|
| G | 4-20 mA, full output to load 800 ohm impedance max |
| P | 20 Vdc or 35 mA |
| S | 20 Vdc or 17 mA |
| T | 1 A, Solid-state relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | 1 A, normally closed relay |

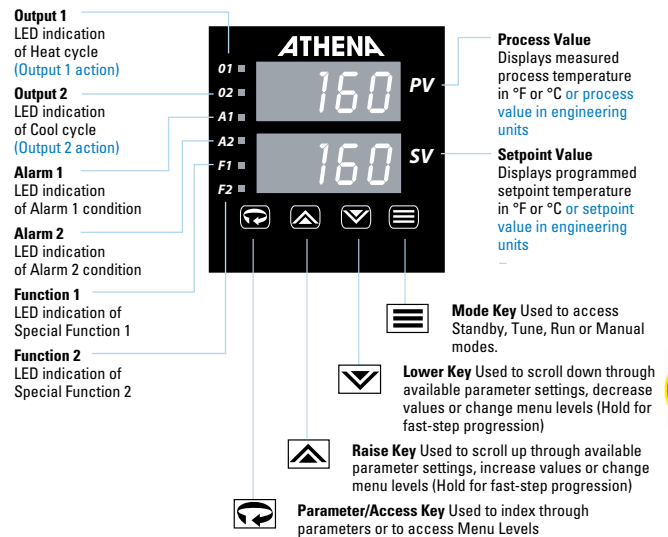
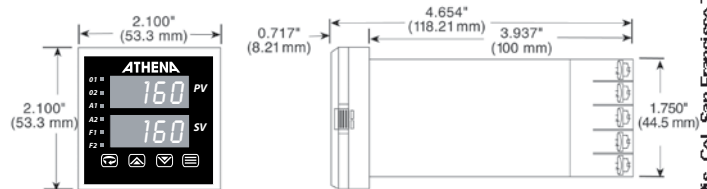
Alarm Outputs

| | |
|----|--|
| 10 | Alarm 1: Dual SSR, 24-240 Vac, 1 A Alarm 2: 24 Vac Only |
| 20 | Dual Open collector, 24 V, 20 microamps |
| 21 | Dual 24 V, 20 mA |
| 22 | Alarm 1: Dual SSR, NC, 24-240 Vac, 1 A Alarm 2: 24 Vac Only |
| 23 | 5 A / 3 A (120/240 Vac), mechanical relay |

Mechanical Characteristics

| | |
|--------------------|--|
| Display | Dual, 4-digit 0.36" (9.2 mm) LED Display Process: Orange Setpoint Value: Green |
| Numeric Range | -1999 to 9999 |
| Front Panel Rating | NEMA 4X (IP65) |
| Front Panel Cutout | 1.771" x 1.771" (45 mm x 45 mm) |
| Connections | Screw Terminals |

Specifications subject to change without notice.



Legacy Series 18 and 19 Universal Temperature/Process Controller

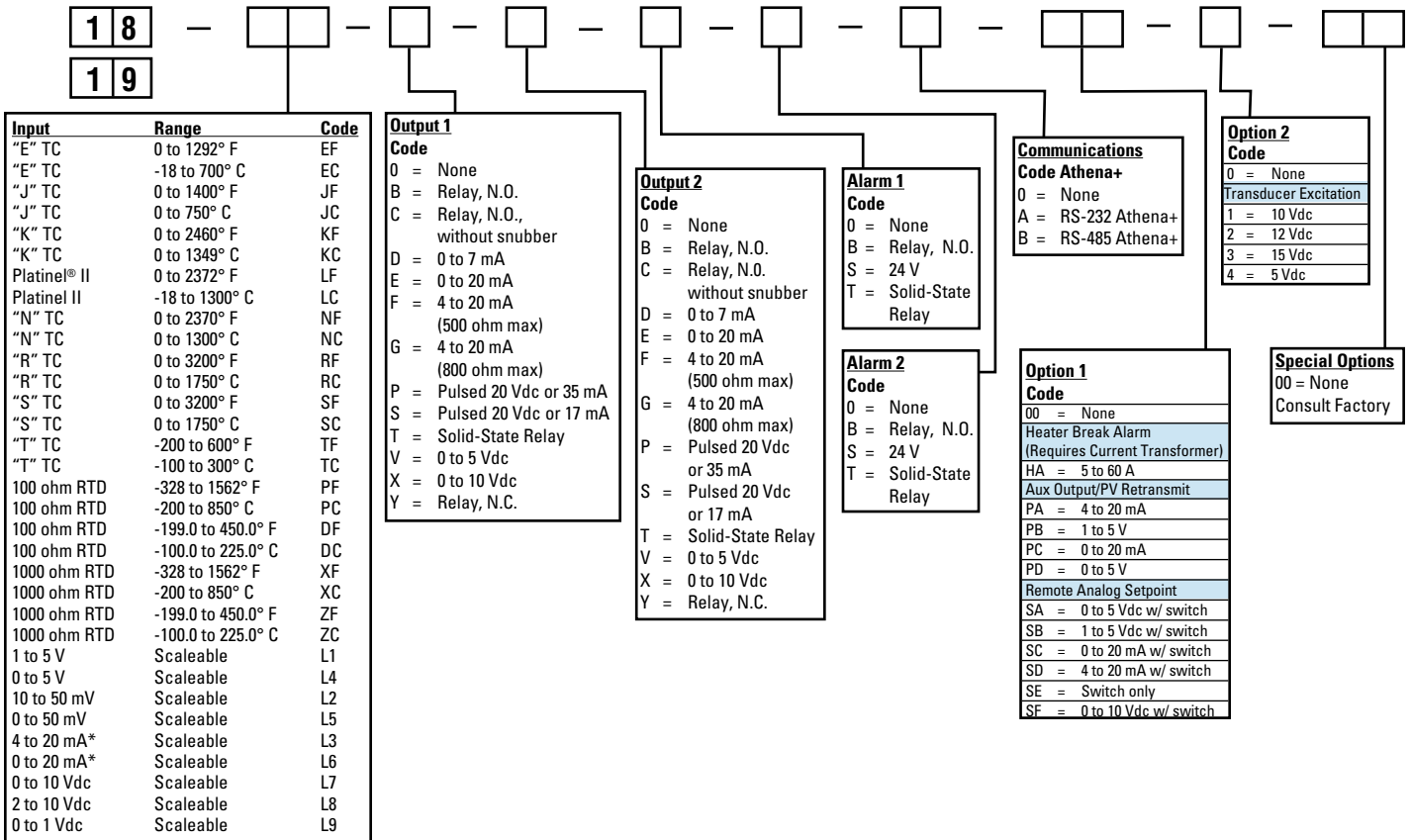


The Athena Legacy 18 and 19 Controllers are available as 1/8 DIN (18) vertical or 1/8 DIN (19) horizontal models. Both panel mounted, auto-tuning controllers can be used for precise control of a single loop with two independent outputs. The controllers accept thermocouple, RTD, voltage, or current input. RS-232 or RS-485 communications are available, and two digital LED displays provide visual indication of various controller functions.

- ▲ Switch-Selectable Inputs
- ▲ User-Selectable Ramp to Setpoint
- ▲ Auto-Tuning, Heat or Cool
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ On/Off Through Full PID Operation (P,PI,PD,PID)
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ Bumpless Auto/Manual Transfer
- ▲ Adjustable Hysteresis & Heat/Cool Spread
- ▲ Field-Configurable Process, Deviation, or Latching Alarms
- ▲ Optional Process Variable Retransmission
- ▲ Remote Setpoint Select, Non-Linear Inputs, or Other Special Options
- ▲ cUL and CE Approvals



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Legacy Series 18 and 19 Universal Temperature/Process Controller

Technical Specifications

Operating Limits

| | |
|---------------------|--|
| Ambient Temperature | 32°F to 131°F (0°C to 55°C) |
| Relative Humidity | |
| Tolerance | 90% non-condensing |
| Line Voltage | 100 to 250 Vac 125 to 300 Vdc 24 Vac/dc optional |
| Power Consumption | Less than 6 VA (instrument) |

Performance

| | |
|-----------------------|--|
| Accuracy | ±0.20 % of full scale, (± 0.10% typical), ± 1 digit |
| Setpoint Resolution | 1 count/0.1 count |
| Repeatability | ±1.0 count |
| Temperature Stability | 5 mV/°C (maximum) |
| TC Cold | |
| End Tracking | 0.05°C/°C ambient |
| Noise Rejection | 100 dB common mode 70 dB series mode |
| Process Sampling | 10 Hz (100 ms) |
| Digital Filtering | Adjustable 0.1 to 10 |

Control Characteristics

| | |
|--------------------|--|
| Setpoint Limits | Span of Sensor |
| Alarms | Adjustable for high/low, selectable process or deviation |
| Rate | 0 to 900 sec |
| Reset | 0 to 2400 sec |
| Cycle Time | 0 = 200 ms; 1 to 120 sec |
| Gain | 0 to 400 |
| Gain Ratio | 0 to 2.0 (in 0.1 increments) |
| Control Hysteresis | 1 to 100 (on/off configuration) |
| Spread (Output 2) | 0 to 100 (above setpoint) |
| Ramp to Setpoint | 1 to 100 min |
| Auto-Tune | Operator initiated from front panel |
| Manual Control | Operator initiated from front panel |

Inputs

| | |
|--------------|--|
| Thermocouple | B, C, E, J, K, N, NNM, R, S, T, Platinel II Maximum lead resistance, 100 ohms for rated accuracy |
| RTD | Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385) |
| Linear | 0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V |

Outputs

| | |
|------------------------------------|--|
| Output #1 Reverse Acting (heating) | |
| Output #2 Direct Acting (cooling) | |
| B | 5 A / 3 A (120/240 Vac), normally open |
| E | 0 - 20 mA |
| F | 4-20 mA, full output to load 500 ohm impedance max. |
| G | 4-20 mA, full output to load 800 ohm impedance max. |



Outputs

| | |
|---|-----------------------------|
| P | 20 Vdc or 35 mA |
| S | 20 Vdc or 17 mA |
| T | 1 A , Solid-state relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | 1 A , normally closed relay |

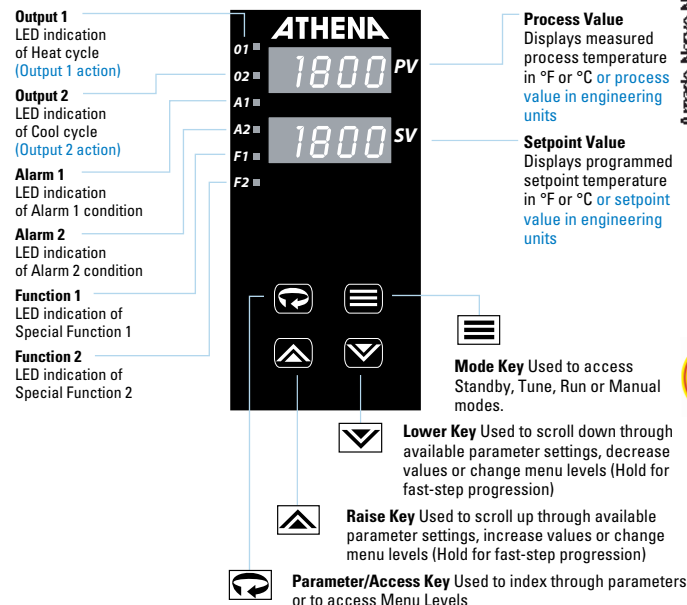
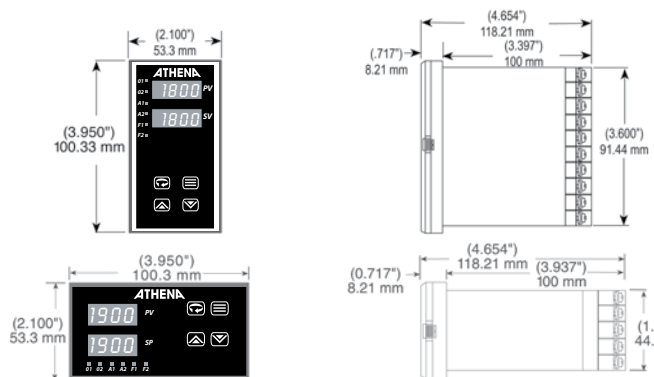
Alarm Outputs

| | |
|---|---|
| B | 5 A / 3 A (120/240 Vac), mechanical relay |
| S | 24 V, 20 mA |
| T | SSR, NC, 24-240 Vac |

Mechanical Characteristics

| | |
|--------------------|--|
| Display | Dual, 4-digit 0.36" (9.2 mm) LED Display Process Value: Orange Setpoint Value: Green |
| Numeric Range | -1999 to 9999 |
| Front Panel Rating | NEMA 4X, (IP65) |
| Front Panel Cutout | 3.622" x 1.771" (92 mm x 45 mm) |
| Connections | Screw Terminals |

Specifications subject to change without notice.



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TEMPCO México, S.A. de C.V.



Legacy Series 25 Universal Temperature/Process Controller

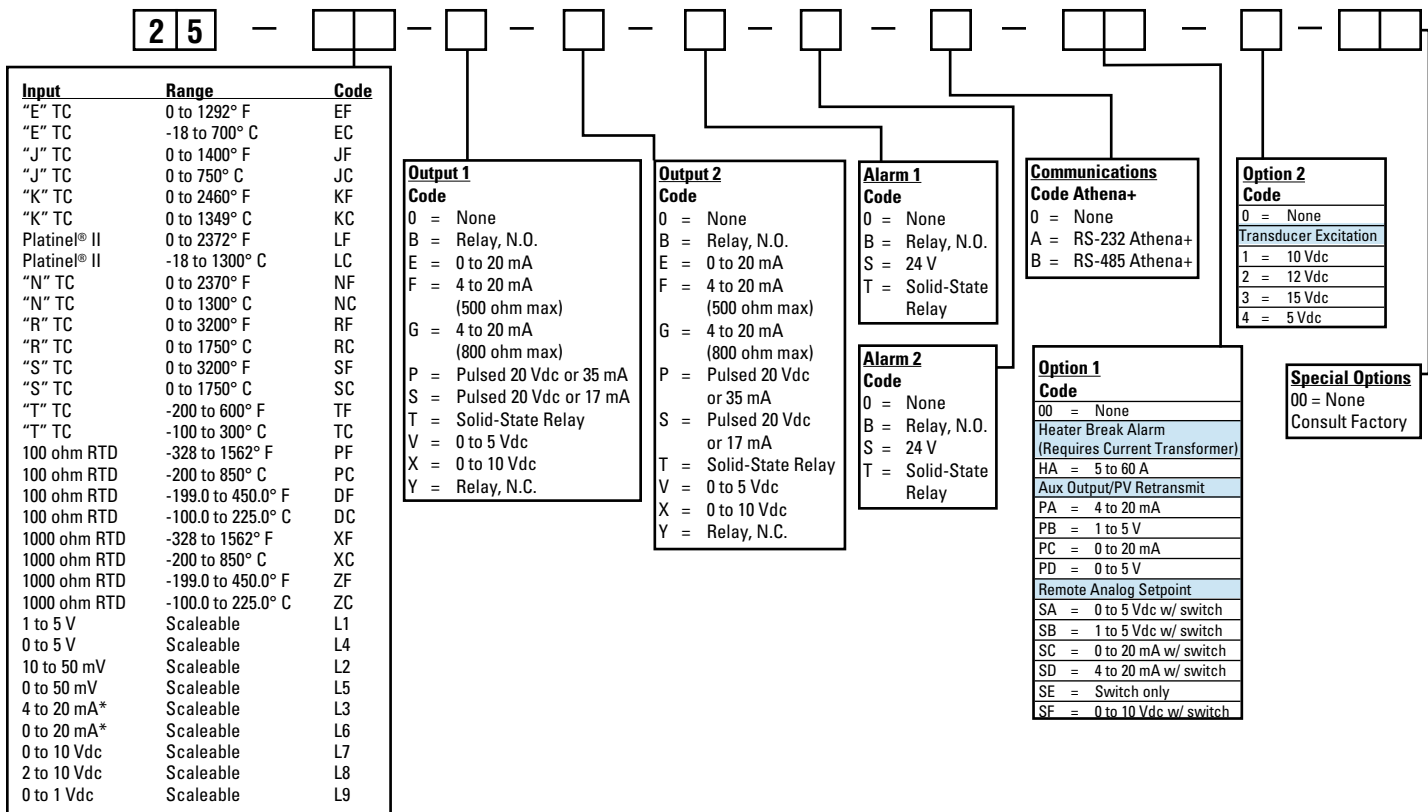


- ▲ User-Selectable Ramp to Setpoint
- ▲ Bumpless Auto/Manual Transfer
- ▲ NEMA 4X (IP65) Dust and Splash-Proof Front Panel
- ▲ On/Off through Full PID Operation (P,PI,PD,PID)
- ▲ Auto-Tuning, Heat or Cool
- ▲ Adjustable Hysteresis & Heat/Cool Spread
- ▲ Field-Configurable Process, Deviation, or Latching Alarms
- ▲ Remote Setpoint Select Option
- ▲ Dual Output/Dual Alarm Capabilities
- ▲ Optional Process Variable Retransmission
- ▲ cUL and CE Approvals

The Athena Legacy 25 is a 1/4 DIN panel mounted, auto-tuning controller that can be used for precise control of a single loop with two independent outputs. The controller accepts thermocouple, RTD, voltage, or current input. RS-232 or RS-485 communications are available, and two digital LED displays provide visual indication of various controller functions.



Ordering Information



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TEMPCO México, S.A. de C.V.





Technical Specifications

Operating Limits

| | |
|---------------------|--|
| Ambient Temperature | 32°F to 131°F (0°C to 55°C) |
| Relative Humidity | |
| Tolerance | 90% non-condensing |
| Line Voltage | 100 to 250 Vac 125 to 300 Vdc 24 Vac/dc optional |
| Power Consumption | Less than 6 VA (instrument) |

Performance

| | |
|-----------------------|--|
| Accuracy | ±0.20 % of full scale, (± 0.10% typical), ± 1 digit |
| Setpoint Resolution | 1 count/0.1 count |
| Repeatability | ±1.0 count |
| Temperature Stability | 5 mV/°C (maximum) |
| TC Cold | |
| End Tracking | 0.05°C/°C ambient |
| Noise Rejection | 100 dB common mode 70 dB series mode |
| Process Sampling | 10 Hz (100 ms) |
| Digital Filtering | Adjustable 0.1 to 10 |

Control Characteristics

| | |
|--------------------|---|
| Setpoint Limits | Span of Sensor |
| Alarms | Adjustable for high/low, selectable process or deviation |
| Rate | 0 to 900 sec |
| Reset | 0 to 2400 sec |
| Cycle Time | 0 = 200 ms; 1 to 120 sec |
| Gain | 0 to 400 |
| Gain Ratio | 0 to 2.0 (in 0.1 increments) |
| Control Hysteresis | 1 to 100 (on/off configuration) |
| Spread (Output 2) | 0 to 100 (above setpoint) |
| Ramp to Setpoint | 1 to 100 min |
| Auto-Tune | Operator initiated from front panel |
| Manual Control | Operator initiated from front panel |

Inputs

| | |
|--------------|--|
| Thermocouple | B, C, E, J, K, N, NNM, R, S, T, Platinel II Maximum lead resistance, 100 ohms for rated accuracy |
| RTD | Platinum 2- and 3-wire, 100 ohms at 0°C, (DIN curve standard 0.00385) |
| Linear | 0-50 mV/10-50 mV, 0-20 mA/4-20 mA, 0-10 mV/0-50 mV, 0-100 mV, 0-1 V/0-5 V, 0-10 V, 1-5 V |

Output Options

| | |
|------------------------------------|--|
| Output #1 Reverse Acting (heating) | |
| Output #2 Direct Acting (cooling) | |
| B | 5 A /3 A (120/240 Vac), normally open |
| E | 0-20 mA |
| F | 4-20 mA, full output to load 500 ohm impedance max. |

Outputs

| | |
|---|--|
| G | 4-20 mA, full output to load 800 ohm impedance max. |
| P | 20 Vdc or 35 mA |
| S | 20 Vdc or 17 mA |
| T | 1 A , Solid-state relay |
| V | 0 to 5 Vdc |
| X | 0 to 10 Vdc |
| Y | 1 A , normally closed relay |

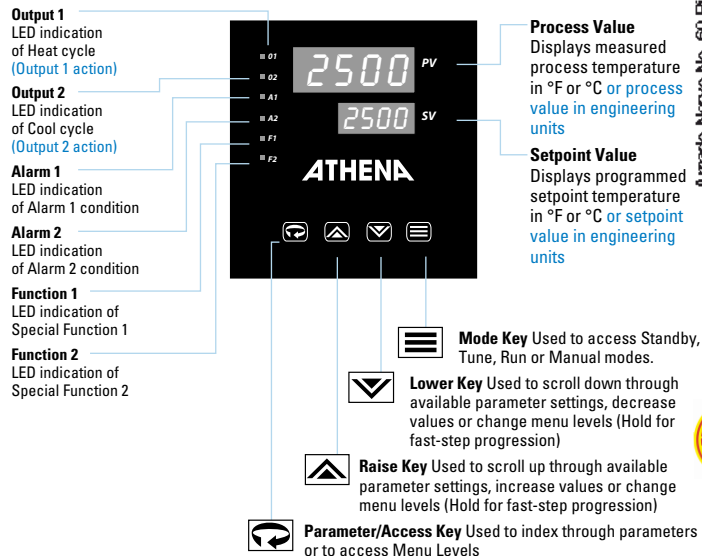
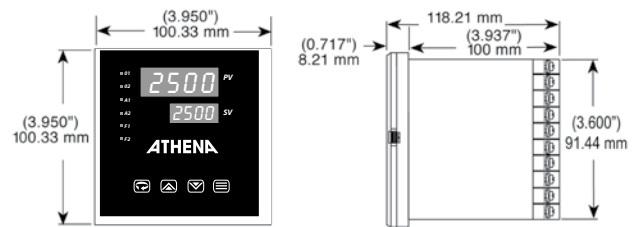
Alarm Outputs

| | |
|---|--|
| B | 5 A /3 A (120/240 Vac), mechanical relay |
| S | 24 V, 20 mA |
| T | SSR, NC, 24-240 Vac |

Mechanical Characteristics

| | |
|--------------------|--|
| Display | Dual, 4-digit 0.36" (9.2 mm) LED Display Process Value: Orange Setpoint Value: Green |
| Numeric Range | -1999 to 9999 |
| Front Panel Rating | NEMA 4X, (IP65) |
| Front Panel Cutout | 3.622" x 3.622" (92 mm x 92 mm) |
| Connections | Screw Terminals |

Specifications subject to change without notice.

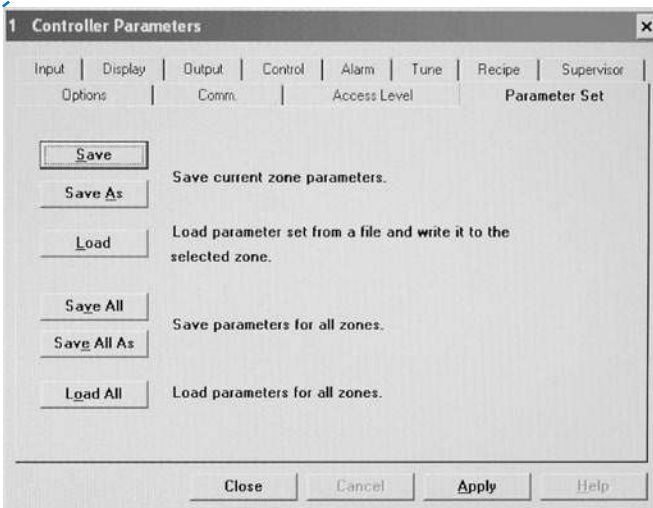
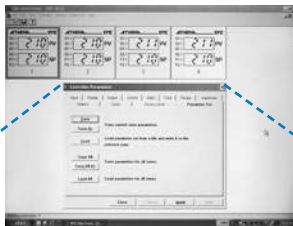
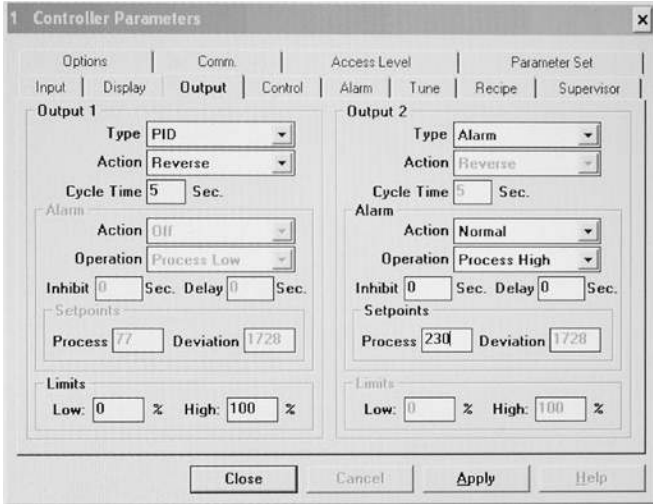


Multi-Comm™ Remote Monitoring and Control Software



Athena Multi-Comm Software is designed for use with all Infinity with Modbus®, C-Series with either Modbus or Athena+ and Legacy Series Controllers using Athena+, and can control up to 100 temperature or process controllers/zones via an RS-485 network.* Up to sixteen controllers/zones can be simultaneously viewed on screen at one time with a color emulation of each controller's front panel display showing process value and setpoint in real time.

- ▲ Pull-Down Menus and Pop-Up Windows Make Controller Configuration and Data Analysis Easy
- ▲ Multiple Operator Security Levels and Password Protection Prevent Unauthorized Access or Accidental Changes to Process Parameters
- ▲ Automatic Controller Detection Locates and Identifies Each Controller or Control Zone on the Network
- ▲ User-Defined 10-Character Controller Labels Allow Custom Identification of Any Controller or Control Zone
- ▲ Storage and Retrieval of all Configuration Parameters for all Networked Controllers or Control Zones to a Single Data File
- ▲ Provides Each Controller or Control Zone with Two Additional Local Alarms (Process Hi/Lo) Without Affecting Other Alarms
- ▲ Captures and Time-Stamps Process Value and Setpoint Data to Log File for Subsequent Storage and Analysis
- ▲ Displays Graph Window Showing Real-Time Plot of Process Value vs. Setpoint for Any Controller or Control Zone on Network



*min requirements: 386SX, 1 Mb of free hard-disk space, Windows® 3.1 or later
 *(client to update minimum hardware and software operating requirements)



Technical Specifications

Security Features

To prevent unauthorized changes to either controller of Multi-Comm parameters, operators must follow specific login and logout procedures. Each operator may have an individual user ID and password, which must be entered exactly the same each time access is requested. Operators may be assigned different security levels, depending on their specific access requirements. You may specify any or all of the following access privileges per operator:

- ▲ Change Setpoint (access to change controllers' or control zones setpoints)
- ▲ View/Change Parameters (access to controllers' or control zones parameters)
- ▲ Controller Configuration (access to Multi-Comm configuration options)
- ▲ Super User (access to add or change operator passwords and privileges)

Communications Setup

Multi-Comm is designed for bidirectional communications to Athena EMC, C-Series, and Legacy Series controllers connected via an RS-485 hookup using an available RS-232 serial port on your computer. It allows you to easily set up your communications port, polling frequency, and timeout frequency.

Controller Setup

Multi-Comm uses the network ID numbers you've assigned to your controllers in order to communicate to them. Using its Automatic controller detection (ACD) feature, Multi-Comm can find and identify each controller or control zone on the network automatically and label each controller or control zone with the network ID you've assigned it. You may also change its name to any 10-character designation.

Adding and Deleting Controllers or Control Zones

Multi-Comm allows you to remove individual controllers or control zones from software control and add them back at any time.

Local Alarms

Multi-Comm provides two additional "local" alarms for each controller or control zones on the network: one high process alarm and one low process alarm. They do not affect the operation of the controller's or control zones' regular alarms.

Data Logging

Multi-Comm will capture the process and setpoint values of each controller or control zones on the network and save it to an ASCII file that can be read by any text editor or word processor. It will also give you the option of appending or overwriting data to an existing log file, when you specify the same log file name at a later date. The log data, which is time-stamped and identified with each controllers' or control zones' name, may also be imported directly into a Microsoft® Excel spreadsheet for further analysis and graphic. Log time can be varied by the operator.

Graph Window

Multi-Comm allows an operator to visually track a selected controller's or control zones' instantaneous setpoint and process values over a period of several minutes with an on-line graphing feature.

Specifications subject to change without notice.



Power Controllers Series 19 and 39 SCR



The Athena 19 and 39 controllers are available as zero voltage switched controllers (19Z and 39Z) and phase-angle fired controllers (19P and 39P) that can be used for control of resistive heater loads. The controller provides capacity up to 80 Amps, and extends heater life while eliminating thermal shock.

- ▲ Optically Isolated
- ▲ Diagnostic Indicators
- ▲ Self-Synchronizing to Line Frequency
- ▲ Isolated Heat Sinks
- ▲ Compact Design
- ▲ Full Protection Against Line Voltage Spikes



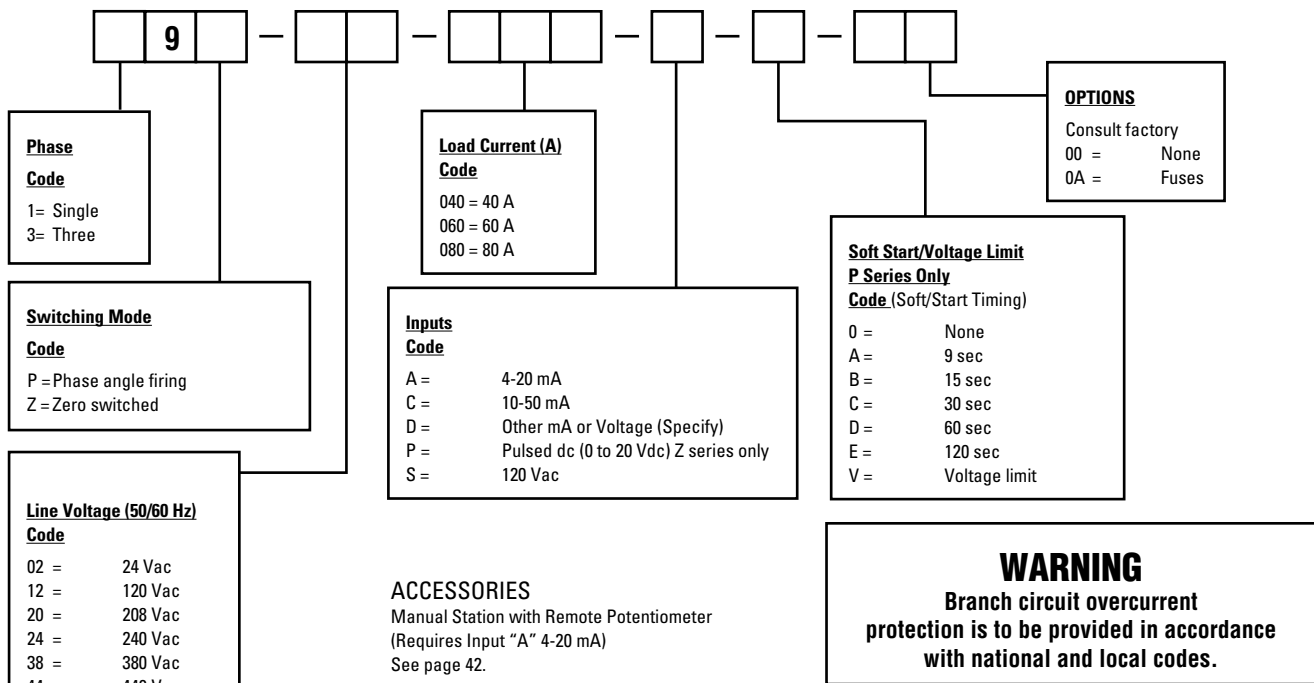
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TEMPCO México, S.A. de C.V. de C.V.



Ordering Information



To Order: Determine proper line voltage; load current; type of load; options required, if any; and input signal to power controller. Use these equations to determine load current.

For load currents above 200 A, consult Athena or your local Athena representative.

Single-Phase = $\frac{\text{watts (load)}}{\text{volts (line)}} = \text{amps}$

Three-Phase = $\frac{\text{watts (load)}}{1.73 \times \text{volts (line)}} = \text{amps}$



[Back to Index](#)

Technical Specifications

| | |
|------------------------------|--|
| Supply Voltage | 24 to 600 Vac |
| Frequency | 50-60 Hz |
| Current Rating | 40, 60 and 80 A |
| Control | |
| Signal Isolation | 2500 Vac |
| Transient Voltage Protection | MOV and RC suppression |
| Ambient Temperature | 32°F to 122°F (0°C to 50°C) for listed current rating |
| Load | Resistive. 3-phase- 3 wire Delta or Ungrounded Wye 19Z/19P-1 phase, 1 line control 39Z-3 phase, 2 lines controlled 39P-3 phase, 3 lines controlled |
| Diagnostic Indicators | Shorted or open SCR reversed signal input (mA/V) |

Zero Voltage Switched Controllers

The 19Z and 39Z SCR controllers are zero crossover fired, high-power solid state switching devices. Zero firing eliminates the RFI generation associated with mechanical relays. With zero voltage firing, the output appears as bursts of full sine waves of line voltage which provides excellent regulation to the load.

Phase Angle Fired Controllers

The 19P and 39P phase angle fired controllers turn each SCR on for a controlled portion of a half-cycle of the line voltage. The effective load voltage is determined by the portion of the line voltage delivered which is proportional to the input control signal. Additionally, the voltage is regulated as the line voltage changes.

| MODEL # | DIMENSIONS | | |
|---------|------------|--------|-------|
| | Height | Width | Depth |
| 19Z | 10.25" | 4.75" | 4.0" |
| 19P | 10.25" | 4.75" | 4.0" |
| 39Z | 10.25" | 9.62" | 4.0" |
| 39P | 10.25" | 14.37" | 4.0" |

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TEMPCO México, S.A. de C.V.



Series RMA



Athena's Series RMA Modular Hot Runner controller is a microprocessor-based, single-zone temperature controller specifically designed for runnerless molding applications. The controller is fully self-tuning, with built-in diagnostics, and features an easy-to-use operator keypad with simultaneous process and set point display and discrete indicators for heat output, alarm, degrees F/C, manual/closed loop mode, and CompuStep®.

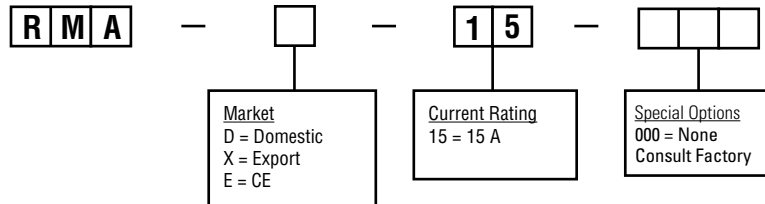
- ▲ CompuStep® bake out feature removes moisture from the heater before full power is applied
- ▲ SafeChange™ “hot swap” feature allows safe removal and replacement of modules
- ▲ Compatible with all D-M-E Company's G Series and Smart Series, ITC, MCS, Yudo, and Incoe brand mainframes
- ▲ Accepts Type “J” or “K” thermocouple input (dip switch selectable)
- ▲ Current monitoring feature displays average output current to load
- ▲ Bumpless auto/manual transfer (dip switch selectable)
- ▲ Built-in loop break, open, and reverse thermocouple protection
- ▲ Preset alarms at 30°F (17°C)
- ▲ CE Compliant

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Ordering Information



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TEMPCO México, S.A. de C.V.

Technical Specifications

Performance Specifications

| | |
|--|---|
| Auto Control Mode | CompuCycle® System |
| Control Accuracy | ±0.1°F (±0.1°C) dependent on the total thermal system |
| Ambient Temperature | 32°F to 130°F (0°C to 55°C) |
| Temperature Stability | ±0.5% of full scale over the ambient range of 32°F to 130°F (0°C to 55°C) |
| Calibration Accuracy | Better than 0.2% of full scale |
| Power Response Time | Better than 200 ms |
| Process Sampling | 100 ms (nominal) |
| CompuStep® System Control Mode | Variable stepping voltage, phase angle fired |
| CompuStep® System Duration | Approximately 5 min. |
| CompuStep® System Output Percent | Steps approximately 4% of input voltage |
| CompuStep® System Override Temperature | 200°F (93°C) |
| Error Mode Response | a. T/C open, T/C reverse, T/C shorted and Loop Break overrides Auto mode/CompuStep® b. Manual mode overrides T/C open, T/C reverse |

Input Specifications

| | |
|--|--|
| Thermocouple (T/C) Sensor | Type "J" or "K" grounded or ungrounded (dip switch selectable) |
| External T/C Resistance | Maximum 100 ohms for accuracy |
| T/C Isolation | Isolated from ground and supply voltages |
| Cold Junction Compensation (0.01°C/°C) | Automatic, better than 0.02°F/°F |
| Input Type | Potentiometric |
| Input Impedance | 10 megohms |
| Input Protection | Diode clamp, RC filter |
| Input Amplifier Stability | Better than 0.05°F/°F (0.03°C/°C) |
| Input Dynamic Range | Greater than 999°F (537°C) |
| Common Mode Rejection Ratio | Greater than 100 dB |
| Power Supply Rejection Ratio | Greater than 70 dB |

Output Specifications

| | |
|----------------------|--|
| Voltages | 240 Vac nominal, single phase 120 Vac available |
| Power Capability | 15 amperes, 3600 watts @ 240 Vac |
| Overload Protection | Triac and load use fast-blow fuses. Both control legs are fused (ABC) Optional: High Speed Fuse (GBB) |
| Power Line Isolation | Optically and transformer isolated from ac lines. Isolation voltage is greater than 2500 volts. |
| Output Drive | Internal solid state triac, triggered by ac zero crossing pulses |

Controls and Indicators

| | |
|-------------------|--|
| Set Point Control | Two buttons up or down |
| Range | 0 to 999°F (535°C) |
| Resolution | 1°F (1°C) |
| Display Top | 3-digit filtered LED |
| Display Bottom | 3-digit filtered LED |
| Status Indicators | Heat Output Alarm °F/°C SoftStart CompuStep® Mode Indication closed loop/manual |
| Power On/Off | Rocker Switch, UL, CSA, and VDE approved |

Electrical Power Specifications

| | |
|--------------------|--|
| Input Voltage | 95-265 Vac |
| Frequency | 50 Hz ± 3 Hz, 60 Hz ± 3 Hz |
| DC Power Supplies | Internally generated, regulated, and temperature compensated |
| Module Power Usage | Less than 3 watts, excluding load |

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TEMPCO México, S.A. de C.V.



Series RMB



Athena's Series RMB Modular Hot Runner controller is a microprocessor-based, single-zone temperature controller specifically designed for runnerless molding applications. The controller is fully self-tuning, with built-in diagnostics, and features an easy-to-use operator keypad with simultaneous process and set point displays and discrete indicators for heat output, alarm, degrees F/C, manual/closed loop mode, and CompuStep®.

- ▲ CompuStep® bake out feature removes moisture from the heater before full power is applied
- ▲ CompuCycle® feature improves response time, reduces thermal fatigue and prolongs heater life by applying AC power smoothly and continuously
- ▲ SafeChange™ “hot swap” feature allows safe removal and replacement of modules
- ▲ Compatible with all D-M-E Company's G Series and Smart Series, ITC, MCS, Yudo, and Incoe brand mainframes
- ▲ Accepts Type “J” or “K” thermocouple input (dip switch selectable)
- ▲ Current monitoring feature displays average output current to load
- ▲ Bumpless auto/manual transfer (dip switch selectable)
- ▲ Built-in loop break, open, and reverse thermocouple protection
- ▲ Adjustable alarms at 30°F (17°C)
- ▲ Built-in triac safety protection
- ▲ Ground fault protection
- ▲ Auto-tuning with adjustable proportional band and rate
- ▲ CE Compliant

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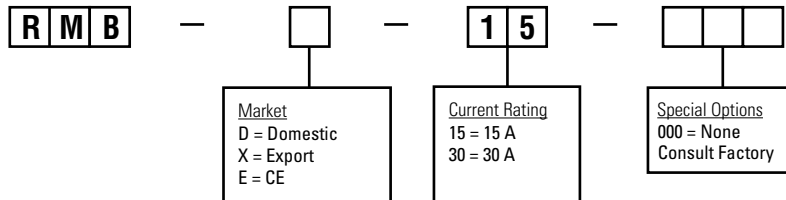
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Ordering Information



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Technical Specifications

Performance Specifications

| | |
|--|---|
| Auto Control Mode | CompuCycle® system |
| Control Accuracy | ±0.1°F (±0.1°C) dependent on the total thermal system |
| Ambient Temperature | 32°F to 130°F (0°C to 55°C) |
| Temperature Stability | ±0.5% of full scale over the ambient range of 32°F to 130°F (0°C to 55°C) |
| Calibration Accuracy | Better than 0.2% of full scale |
| Power Response Time | Better than 200 ms |
| Process Sampling | 100 ms (nominal) |
| CompuStep® System Control Mode | Variable stepping voltage, phase angle fired |
| CompuStep® System Duration | Approximately 5 min |
| CompuStep® System Output Percent | Steps approximately 4% of input voltage |
| CompuStep® System Override Temperature | 200°F (93°C) |
| Error Mode Response | a. T/C open, T/C reverse, T/C shorted and Loop Break overrides Auto mode/CompuStep® b. Manual mode overrides T/C open, T/C reverse |

Input Specifications

| | |
|------------------------------|--|
| Thermocouple (T/C) Sensor | Type "J" or "K" grounded or ungrounded (dip switch selectable) |
| External T/C Resistance | Max. 100 ohms for rated accuracy |
| T/C Isolation | Isolated from ground and supply voltages |
| Cold Junction Compensation | Automatic, better than 0.02°F/°F (0.01°C/°C) |
| Input Type | Potentiometric |
| Input Impedance | 10 megohms |
| Input Protection | Diode clamp, RC filter |
| Input Amplifier Stability | Better than 0.05 °F/°F (0.03°C/°C) |
| Input Dynamic Range | Greater than 999°F (537°C) |
| Common Mode Rejection Ratio | Greater than 100 dB |
| Power Supply Rejection Ratio | Greater than 70 dB |

Output Specifications

| | |
|------------------------------|--|
| Voltages | 240 Vac nominal, single phase 120 Vac available |
| Power Capability | 15 amperes, 3600 watts @ 240 Vac; 30 amperes, 7200 watts @ 240 Vac |
| Overload Protection | Triac and load use fast-blow fuses. Both control legs are fused (ABC) Optional: High Speed Fuse (GBB) |
| Power Line Isolation | Optically and transformer isolated from ac lines. Isolation voltage is greater than 2500 volts. |
| Output Drive | Internal solid state triac, triggered by ac zero crossing pulses |
| Ground Fault Interrupt (GFI) | Trips at 55 mA of leakage current |

Controls and Indicators

| | |
|-------------------|--|
| Set Point Control | Two buttons up or down. |
| Range | 0 to 999°F (535°C) |
| Resolution | 1°F (1°C) |
| Display Top | 3-digit filtered LED |
| Display Bottom | 3-digit filtered LED |
| Status Indicators | Heat Output Alarm °F/°C SoftStart CompuStep® Mode Indication Normal (closed loop) Manual and Standby Boost Function Indicator |
| Boost Control | Pushbutton |
| Power On/Off | Rocker Switch, UL, CSA, and VDE approved |

Electrical Power Specifications

| | |
|-------------------------|---|
| Input Voltage | 95-265 Vac |
| Frequency | 50 Hz ± 3 Hz, 60 Hz ± 3 Hz |
| DC Power Supplies | Internally generated, regulated and temperature compensated |
| Module Power Usage load | Less than 3 watts, excluding load |

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TEMPCO México, S.A. de C.V.



Series RMC



Athena's Series RMC Modular Hot Runner controller is a microprocessor-based, single-zone temperature controller specifically designed for runnerless molding applications. The controller is fully self-tuning, with built-in diagnostics, and features an easy-to-use operator keypad with simultaneous process and set point displays and discrete indicators for heat output, alarm, degrees F/C, manual/closed loop mode, and CompuStep®.

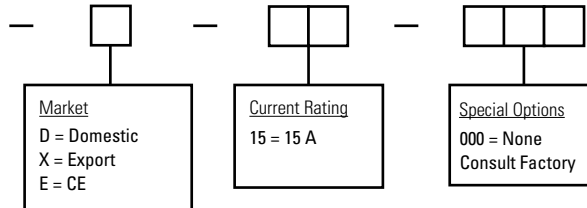
- ▲ CompuStep® bake out feature removes moisture from the heater before full power is applied
- ▲ CompuCycle® feature improves response time, reduces thermal fatigue and prolongs heater life by applying AC power smoothly and continuously
- ▲ SafeChange™ “hot swap” feature allows safe removal and replacement of modules
- ▲ Compatible with all D-M-E Company's G Series and Smart Series, ITC, MCS, Yudo, and Incoe Brand mainframes
- ▲ Accepts Type “J” or “K” thermocouple input (dip switch selectable)
- ▲ Current monitoring feature displays average output current to load
- ▲ Bumpless auto/manual transfer (dip switch selectable)
- ▲ Built-in loop break, open, and reverse thermocouple protection
- ▲ Adjustable alarms at 30°F (17°C)
- ▲ Built-in triac safety protection
- ▲ Ground fault protection
- ▲ Auto-tuning with adjustable proportional band and rate
- ▲ Modbus communications
- ▲ CE Compliant

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Ordering Information

R M C



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Technical Specifications

Performance Specifications

| | |
|--|---|
| Auto Control Mode | CompuCycle® system |
| Control Accuracy | ±0.1°F (±0.1°C) dependent on the total thermal system |
| Ambient Temperature | 32°F to 130°F (0°C to 55°C) |
| Temperature Stability | ±0.5% of full scale over the ambient range of 32°F to 130°F (0°C to 55°C) |
| Calibration Accuracy | Better than 0.2% of full scale |
| Power Response Time | Better than 200 ms |
| Process Sampling | 100 ms (nominal) |
| CompuStep® System Control Mode | Variable stepping voltage, phase angle fired |
| CompuStep® System Duration | Approximately 5 min |
| CompuStep® System Output Percent | Steps approximately 4% of input voltage |
| CompuStep® System Override Temperature | 200°F (93°C) |
| Error Mode Response | a. T/C open, T/C reverse, T/C shorted and Loop Break overrides Auto mode/CompuStep® b. Manual mode overrides T/C open, T/C reverse |

Input Specifications

| | |
|------------------------------|--|
| Thermocouple (T/C) Sensor | Type "J" or "K" grounded or ungrounded (dip switch selectable) |
| External T/C Resistance | Max. 100 ohms for accuracy |
| T/C Isolation | Isolated from ground and supply voltages |
| Cold Junction Compensation | Automatic, better than 0.02°F/°F (0.01°C/°C) |
| Input Type | Potentiometric |
| Input Impedance | 10 megohms |
| Input Protection | Diode clamp, RC filter |
| Input Amplifier Stability | Better than 0.05 °F/°F (0.03°C/°C) |
| Input Dynamic Range | Greater than 999°F (537°C) |
| Common Mode Rejection Ratio | Greater than 100 dB |
| Power Supply Rejection Ratio | Greater than 70 dB |

Output Specifications

| | |
|------------------------------|---|
| Voltages | 240 Vac nominal, single phase 120 Vac available |
| Power Capability | 15 amperes, 3600 watts @ 240 Vac |
| Overload Protection | Triac and load use fast-blow fuses. Both control legs are fused (ABC) Optional: High Speed Fuse (GBB) |
| Power Line Isolation | Optically and transformer isolated from ac lines. Isolation voltage is greater than 2500 volts. |
| Output Drive | Internal solid state triac, triggered by ac zero crossing pulses |
| Ground Fault Interrupt (GFI) | Trips at 55 mA of leakage current |

Controls and Indicators

| | |
|-------------------|---|
| Set Point Control | Two buttons up or down |
| Range | 0 to 999°F (535°C) |
| Resolution | 1°F (1°C) |
| Display Top | 3-digit filtered LED |
| Display Bottom | 3-digit filtered LED |
| Status Indicators | Heat Output Alarm °F/°C SoftStart CompuStep® Mode Indication Normal (closed loop) Manual and Standby Boost Function Indicator |
| Power On-Off | Rocker Switch, UL, CSA, and VDE approved |

Electrical Power Specifications

| | |
|--------------------|---|
| Input Voltage | 95-265 Vac |
| Frequency | 50 Hz ± 3 Hz, 60 Hz ± 3 Hz |
| DC Power Supplies | Internally generated, regulated and temperature compensated |
| Module Power Usage | Less than 3 watts, excluding load |

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TEMPCO México, S.A. de C.V.



Series IMP

(A New Look)



Athena's Series IMP Modular Hot Runner controller is a microprocessor-based, single-zone temperature controller specifically designed for runnerless molding applications. The controller is fully self-tuning, with built-in diagnostics, and features an easy-to-use operator keypad with simultaneous process and set point display and discrete indicators for heat output, alarm, degrees F/C, manual/closed loop mode, and CompuStep®.

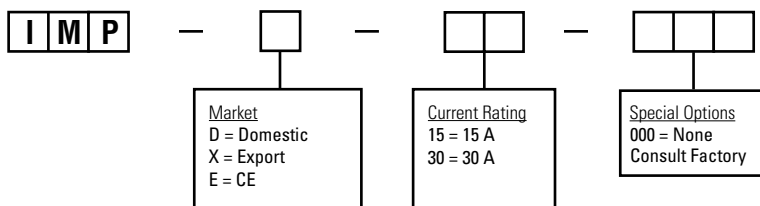
- ▲ CompuStep® bake out feature removes moisture from the heater before full power is applied
- ▲ CompuCycle® feature improves response time, reduces thermal fatigue, and prolongs heater life by applying AC power smoothly and continuously
- ▲ SafeChange™ “hot swap” feature allows safe removal and replacement of modules
- ▲ Compatible with all D-M-E Company's G Series and Smart Series, ITC, MCS, Yudo, and Incoe brand mainframes
- ▲ Accepts Type “J” or “K” thermocouple input (dip switch selectable)
- ▲ Current monitoring feature displays average output current to load
- ▲ Bumpless auto/manual transfer (dip switch selectable)
- ▲ Built-in loop break, open, and reverse thermocouple protection
- ▲ Preset alarms at 30°F (17°C)
- ▲ CE Compliant
- ▲ Available in 30 amp modules
- ▲ Available 10 and 15 amp single zone portable units

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Ordering Information



Note: The 30 amp Series IMP is twice as wide as the 15 amp model and has a circuit breaker instead of a power switch.



[Back to Index](#)

Technical Specifications

Performance Specifications

| | |
|--|--|
| Auto Control Mode | CompuCycle® System |
| Control Accuracy | ± 0.1°F (± 0.1°C) dependent on total thermal system |
| Ambient Temperature | 32°F to 130°F (0°C to 55° C) |
| Temperature Stability | ± 0.5% of full scale over the ambient range of 32°F to 130°F (0°C to 55°C) |
| Calibration Accuracy | Better than 0.2% of full scale |
| Power Response Time | Better than 200 ms |
| Process Sampling | 100 ms (nominal) |
| CompuStep® System Control Mode | Variable stepping voltage, phase angle fired |
| CompuStep® System Duration | Approximately 5 min. |
| CompuStep® System Output Percent | Steps approximately 4% of input voltage |
| CompuStep® System Override Temperature | 200°F (93°C) |
| Error Mode Response | a. T/C Open, TC reverse, TC shorted and Loop Break overrides Auto mode/CompuStep® b. Manual Mode overrides T/C Open and T/C Reverse |

Input Specifications

| | |
|------------------------------|--|
| Thermocouple (T/C Sensor) | Type "J" or "K" grounded or ungrounded (Dip Switch Selectable) |
| External T/C Resistance | Maximum 100 ohms for accuracy |
| T/C Isolation | Isolated from ground and supply voltages |
| Cold Junction Compensation | Automatic, better than 0.02°F/°F (0.01°C/°C) |
| Input Type | Potentiometric |
| Input Impedance | 10 megohms |
| Input Protection | Diode clamp, RC filter |
| Input Amplifier Stability | Better than 0.05°F/°F (0.03°C/°C) |
| Input Dynamic Range | Greater than 999°F (537°C) |
| Common Mode Rejection Ratio | Greater than 100 dB |
| Power Supply Rejection Ratio | Greater than 70 dB |

Output Specifications

| | |
|----------------------|---|
| Voltages | 240 Vac nominal, single phase 120 Vac available |
| Power Capability | 15 amps, 3600 watts @ 240 Vac |
| Overload Protection | Triac and load use fast blow fuses Both control legs are fused (ABC) Optional: High Speed Fuses (GBB) |
| Power Line Isolation | Optically and transformer isolated from ac lines. Isolation voltage is greater than 2500 volts |
| Output Drive | Internal solid state triac, triggered by ac zero crossing pulses |

Controls and Indicators

| | |
|-------------------|--|
| Set Point Control | Precision 3 digit pushbutton switch, direct reading |
| Range | 0 to 999°F (535°C) |
| Resolution | 1°F (1°C) |
| Accuracy | Better than 0.5°F (0.3°C) |
| Display Top | 3-digit filtered LED |
| Status Indicators | Heat Output Alarm Degrees F/C Soft Start CompuStep® Mode Indication |
| Power On/Off | Rocker Switch, UL, CSA, and VDE approved |

Electrical Power Specifications

| | |
|--------------------|--|
| Input Voltage | 95-265 Vac |
| Frequency | 50 Hz + 3 Hz, 60 Hz + 3 Hz |
| DC Power Supplies | Internally generated, regulated, and temperature compensated |
| Module Power Usage | Less than 3 watts, excluding load |

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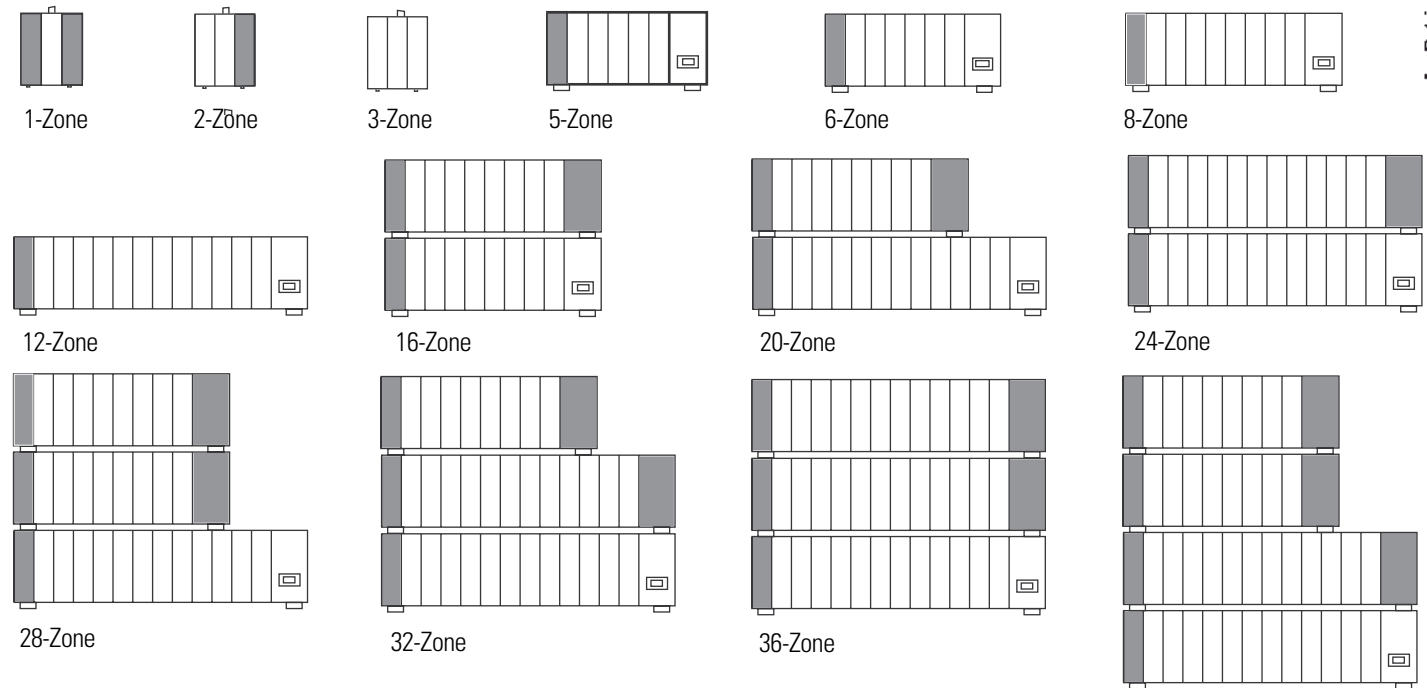


MFL & MFH Mainframe Configurations

Mainframes for 15-Amp Control Modules*

For use with RMA, RMB, RMC & IMP control modules only

The configurations illustrated below provide a wide selection of zone capacities to suit almost any hot runner control application. The 5, 6, 8 and 12 zone frames 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.



| Dimensions* | | | | |
|---------------|--------|---------|---------|---------------|
| MFL Mainframe | Height | Depth | Width | MFH Mainframe |
| 1- & 2-zone | 9-1/4" | 10" | 7" | 1-zone |
| 3-zone | 9-1/4" | 12-3/4" | 7" | |
| 5-zone | 8-7/8" | 11-1/2" | 16-1/8" | 2-zone |
| 6-zone | 8-7/8" | 11-1/2" | 18-1/8" | 3-zone |
| 8-zone | 8-7/8" | 11-1/2" | 22-1/8" | 4-zone |
| 12-zone | 8-7/8" | 11-1/2" | 30-1/4" | 5- & 6-zone |

*For mainframes over 12 zones, add dimensions of stacked cabinets.

Notes on Mainframes

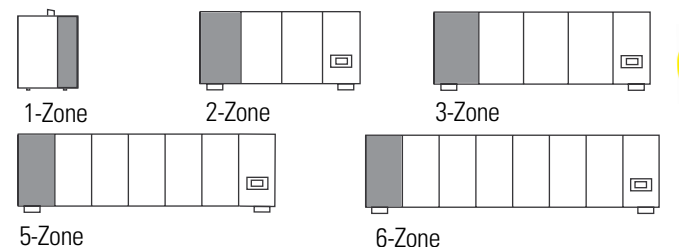
Mainframe cabinets may be stacked to form a permanent, integrated unit with a single ac power input and breaker. Up to 48 control modules (zones) may be accommodated.

5, 6, 8, and 12 zone mainframes have a circuit breaker rating of 50 amps and a maximum total wattage of 20 kW (domestic models) and 36 kW (Export and CE Models). Mainframes for 16 zones and over have a circuit breaker rating of 70 amps and 29 kW (domestic models) and 50.4 kW (Export and CE Models).

Mainframes for 30-amp Modules**

The 5 configurations illustrated provide 1, 2, 3, 5 or 6 zones of 30 amp control for higher wattage heater applications.

**NOTE: Blank panel(s) should be ordered to provide for heat dissipation and to cover unused zones in frames. Combination frames to accommodate both 15 and 30 amp modules are available on special order.



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MFL, MFH and Portable Mainframes



Single-Zone



Dual-Zone

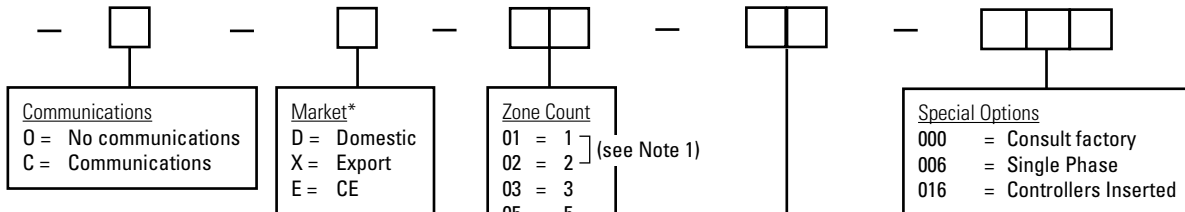


Tri-Zone

Standard Mainframes (15 amps)

Ordering Information

M F L



Communications
O = No communications
C = Communications

Market*
D = Domestic
X = Export
E = CE

Zone Count
01 = 1
02 = 2
03 = 3
05 = 5
06 = 6
08 = 8
12 = 12
16 = 16
20 = 20
24 = 24
28 = 28
32 = 32
36 = 36
40 = 40
44 = 44
48 = 48

(see Note 1)

Special Options
000 = Consult factory
006 = Single Phase
016 = Controllers Inserted

* Use "D" ordering suffix for 60 Hz & °F
Use "X" ordering suffix for 50 Hz & °C
Use "E" ordering suffix for 50 Hz & °C, CE Compliant

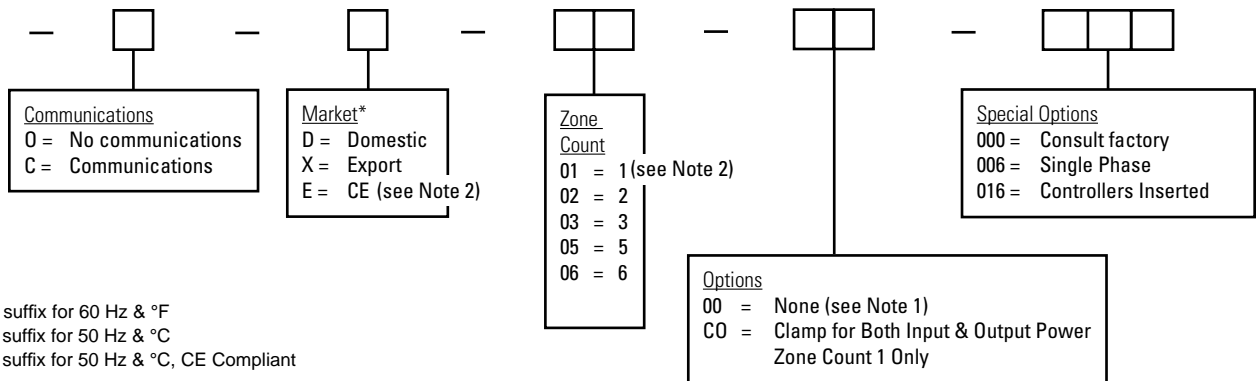
Note 1: CE Rating only available for 3 Zone and higher mainframe configurations

- 00 = Standard for 5, 8, and 12-Zone Mainframes
- 01 = COPO = Clamp In / 5 Pin Out
- 02 = NOPO = NEMA In / 5 Pin Out
- 03 = COPF = Clamp In / 5 Pin Out - Fan
- 04 = NOCO = NEMA In / Clamp Out
- 05 = NONO = NEMA In / NEMA Out
- 06 = COPS = Clamp In / 5 Pin Out - Fan w/Switch
- 07 = NOPS = NEMA In / 5 Pin Out - Fan w/Switch
- 08 = CONF = Clamp In / NEMA Out - Fan
- 09 = COPT = Clamp In / Combo MP/TC 10 Pin Female - Fan w/Switch
- 10 = NONF = NEMA In / NEMA Out - Fan
- 11 = NOPF = NEMA In / 5 Pin Out - Fan
- 12 = CODO = Clamp In / (2) 25 Pin Inserts
- 13 = COPE = Clamp In / Combo MP/TC 16 Pin Female - Fan w/Switch
- 14 = NOPT = NEMA In / Combo MP/TC 16 Pin Female

High-Power Mainframes (30 amps)

Ordering Information

M F H



Communications
O = No communications
C = Communications

Market*
D = Domestic
X = Export
E = CE (see Note 2)

Zone Count
01 = 1
02 = 2
03 = 3
05 = 5
06 = 6

(see Note 2)

Special Options
000 = Consult factory
006 = Single Phase
016 = Controllers Inserted

Options
00 = None (see Note 1)
CO = Clamp for Both Input & Output Power Zone Count 1 Only

* Use "D" ordering suffix for 60 Hz & °F
Use "X" ordering suffix for 50 Hz & °C
Use "E" ordering suffix for 50 Hz & °C, CE Compliant

Note 1: Standard for Zone Counts 2 through 6

Note 2: Single (1) Zone unit not available for CE Market

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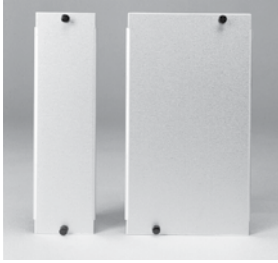
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Hot Runner Control System Accessories

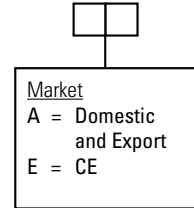
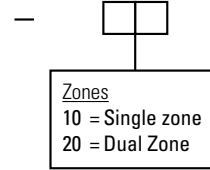
Closure (Blanking) Panels



Must be used to cover unused zones in main frames for correct air circulation (cooling). MFB10 for use on single unused zones. MFB20 for use on two unused zones. Supplied with push-pull panel fasteners.

Ordering Information

MFB



Universal Floor Stand

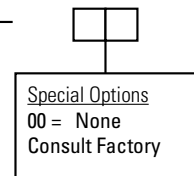


Floorstand is adjustable for use with 5, 8 or 12 slot mainframes.

Ordering Information

MFS

5 8 1 2



BEDROS Floor Stand



Ordering Information

BFS

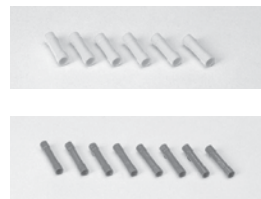
0 0 0

Module Replacement Fuses



| Catalog No. | Description | Amps | Qty. |
|-------------|---------------|------|------|
| ABC15 | 15 amp, 240 V | 15 | 5 |
| A25X30 | 30 amp, 240 V | 30 | 1 |

Insulated Crimp Connectors



For easy splicing of mold power input connector leads to heater leads.

| Catalog Number | Amps | Qty. |
|----------------|------|------|
| HWCC-1 | 15 | 36 |
| HWCC-2 | 30 | 20 |

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How to Size Circuit Breakers and Transformer Kits

To Size Circuit Breakers, Follow These Guidelines:

- 5, 8, 12 zones = 50 A breaker rating @ 20 kW max.
- >12 zones = 70 A breaker rating @ 29 kW max.

To Size a Transformer Kit, Follow These Steps:

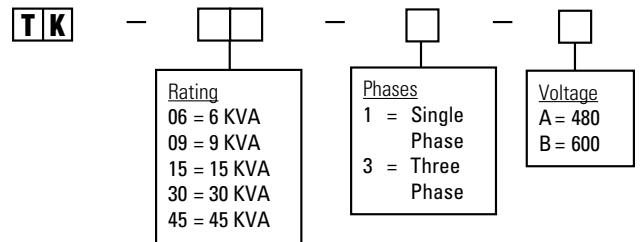
1. Calculate total heater wattage
2. Divide result by 1000 (equals kVA)
3. Select transformer from table below

| Transformer Part No. | Load Rating in kVA | 3-Phase Amperage (per Phase) |
|----------------------|--------------------|------------------------------|
| TK09 | 9 | 21.7 A |
| TK15 | 15 | 36.1 A |
| TK30 | 30 | 72.3 A |
| TK45 | 45 | 108.4 A |



Transformer kits are fully wired and include enclosed transformer (480 Vac 3Ø in, 240 Vac 3Ø out) with adjustable voltage taps, power cable to main frame, disconnect switch, extra fuses, and floor stand with all hardware. Other transformers are available for your particular power requirements.

Ordering Information

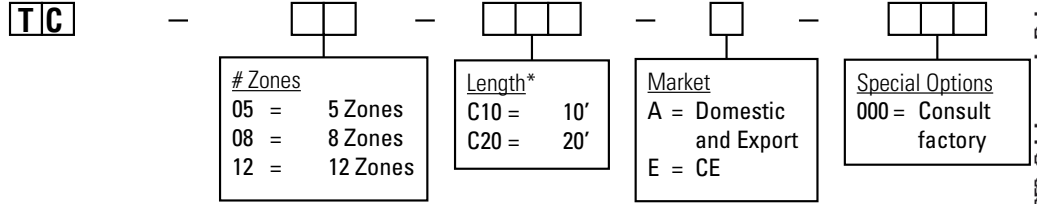


Mold Power and Thermocouple Cables Ordering Information

Mold Thermocouple Cable



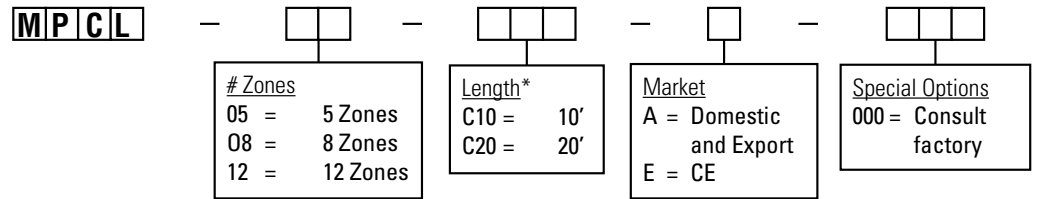
Ordering Information



Mold Power Cable (15 A)



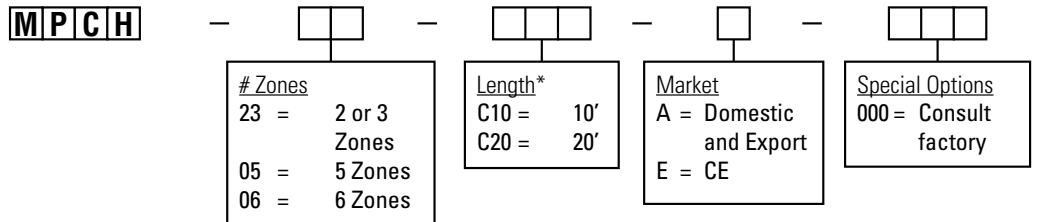
Ordering Information



Mold High-Power (30 A) Cable



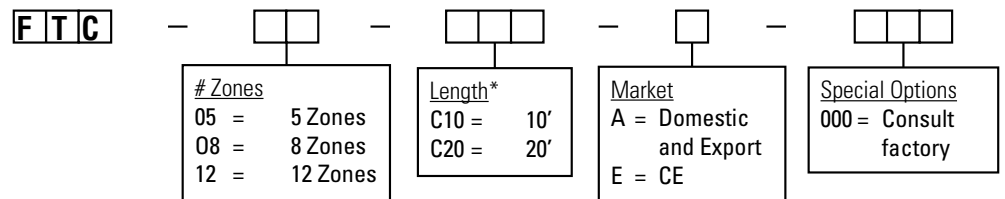
Ordering Information



Flexible Mold Thermocouple Cables



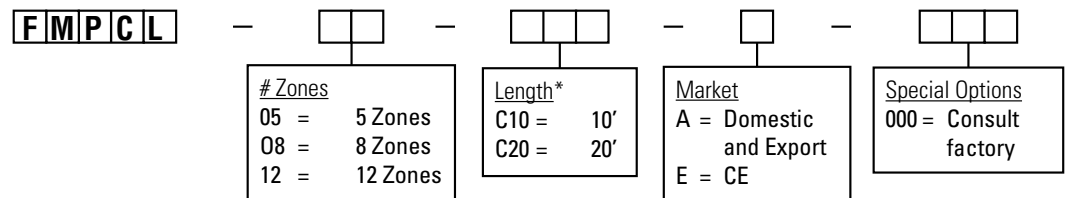
Ordering Information



Mold Power Cable (15 A)



Ordering Information



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Thermocouple and Mold Power Connectors

Thermocouple Connectors



Domestic and Export Market

Ordering Information

M T C

| # Zones | |
|---------|----------|
| 05= | 5 Zones |
| 08= | 8 Zones |
| 12= | 12 Zones |

| Market |
|-------------------------|
| A = Domestic and Export |
| E = CE |



CE Market

Mold Power/Input Connectors



Domestic and Export Market

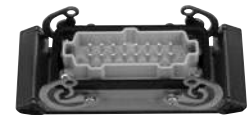
Ordering Information

Mold Power Connectors

P I C L

| # Zones | |
|---------|----------|
| 05 = | 5 Zones |
| 08 = | 8 Zones |
| 12 = | 12 Zones |

| Market |
|-------------------------|
| A = Domestic and Export |
| E = CE |



Mold High-Power (30 A) Connectors

P I C H

| # Zones | |
|---------|--------------|
| 23 = | 2 or 3 Zones |
| 05 = | 5 Zones |
| 06 = | 6 Zones |

| Market |
|-------------------------|
| A = Domestic and Export |
| E = CE |



CE Market

Combo Connectors for Tri-Zone™ System



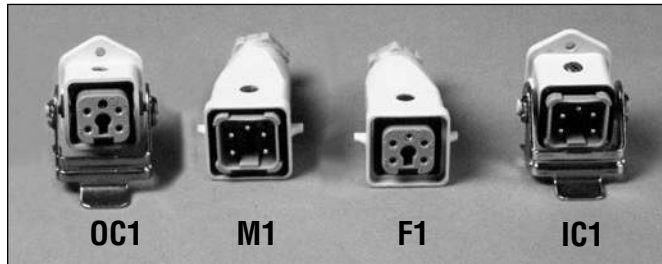
Ordering Information

□ □ □ □ **3**

| Market |
|-------------------------|
| A = Domestic and Export |
| E = CE |

Connectors and Cables for Portable Controllers

5-Pin Combination Power and Thermocouple Connectors for Portable Controllers (one per zone required)



C K P T



Type
 OC1 = Frame
 M1 = Cable, Frame-End
 F1 = Cable, Mold-End
 IC1 = Mold

Individual 5-Pin Cable for Portable Controllers (one per zone required)



M P T C

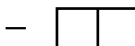


Length
 10 = 10'
 20 = 20'

Combo Cable for Tri-Zone System



T P T C



Length
 10 = 10'
 20 = 20'

NEMA Connectors for Portable Controllers

| | | | |
|--|---|--|---|
| | | | |
| 215K005U01 (AC1512F) | 215K006U01 (AC1512M) | 215K004U01 (AC1524F) | 215K003U01 (AC1524M) |
| Cord connector, female 15 A, 125 V Power out | Cord connector, male 15 A, 125 V Power in | Cord connector, female 15 A, 250 V Power out | Cord connector, male 15 A, 250 V Power in |

| | | | |
|---|--|----------------------|--------------------------|
| | | | |
| 215K002U01 (AC2024F) | 215K001U01 (AC2024M) | TCS1 | 215P001U01 (M2MJ) |
| Connector chassis, female 20 A, 250 V Power out | Connector chassis, male 20 A, 250 V Power in | TC Socket, mold side | TC mini-plug |

Combo Connector for Tri-Zone System



T P T 0 3

Market
 A = Domestic and Export
 E = CE

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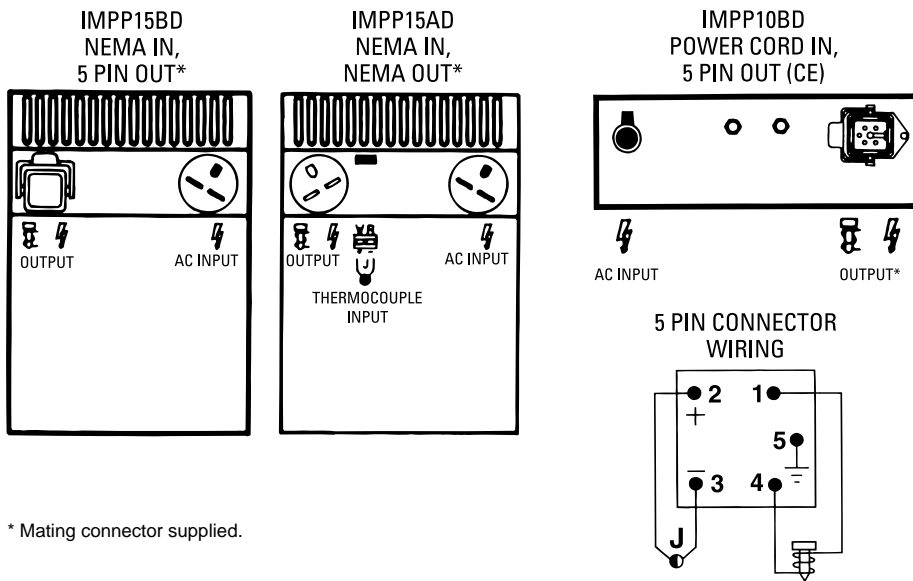


Series IMP/P and RMC/P Horizontal Portable Controllers

Series IMP/P Single-Zone Controller

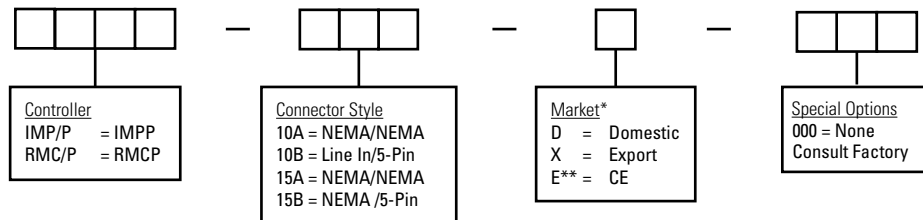


For features and technical specifications of the Series IMP/P, refer to the Series IMP description on pages 90 & 91.



* Mating connector supplied.

Ordering Information



* Use "D" ordering suffix for 60 Hz & °F
Use "X" ordering suffix for 50 Hz & °C
Use "E" ordering suffix for 50 Hz & °C, CE Compliant
** 10 amp only

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Hot Runner Selection Guide



| Feature | Controller Series | | | | |
|---------------------------------|-------------------|----------------|----------------|------------|------------|
| | RMA | RMB | RMC | IMP | RMT |
| CE-Compliant | X | X | X | X | X |
| Fahrenheit/Centigrade | Dip Switch | Dip Switch | Dip Switch | Dip Switch | Dip Switch |
| Type J/K Thermocouple | Dip Switch | Dip Switch | Dip Switch | Dip Switch | Dip Switch |
| Process Display (LED) | X | X | X | X | X |
| CompuStep® | X | X | X | X | X |
| SafeChange™ "Hot-Swap" Feature | X | X | X | X | X |
| Setpoint Display | LED | LED | LED | Thumbwheel | LED |
| Setpoint Adjust | Pushbutton | Pushbutton | Pushbutton | Thumbwheel | Pushbutton |
| Control Algorithms | Fixed PI | PID (autotune) | PID (autotune) | Fixed PI | Fixed PI |
| Auto/Manual Control | X | X | X | X | X |
| Bumpless Auto/Manual Transfer | Dip Switch | Dip Switch | Dip Switch | Dip Switch | |
| Current Reading | X | X | X | X | |
| Temperature Alarms | Adjustable | Adjustable | Adjustable | Adjustable | Adjustable |
| Reverse Thermocouple Alarm | X | X | X | X | X |
| Open Thermocouple Alarm | X | X | X | X | X |
| Open TC Switch to Manual | X | X | X | X | X |
| Selectable Open TC Action | | X | X | | |
| Alarm Output | X | X | X | X | |
| Ground Fault Alarm | | X | X | | |
| Loop Break (Open Heater Alarm) | X | X | X | X | X |
| % Output Reading | X | X | X | X | X |
| Shorted Triac Safety Relay | | X | X | | |
| Boost Mode | | X | X | | |
| Standby (Idle Setpoint/Setback) | X | X | X | X | |
| Selectable Power Up Mode | X | X | X | X | |
| Front Panel Lockout | | X | X | | |
| All Command | | | X | | |
| Set Point Limits | | X | X | | |
| High Temp Memory | | X | X | | |
| Modbus Communication | | | X | | |
| Warranty Years | 2 | 2 | 2 | 2 | 2 |

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MFL, MFH and Portable Hot Runner Controls, System Components

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#Zones

| | Cables | | Connectors | | Mold Terminal Boxes** | | |
|--|--|--|----------------------|--------------|-----------------------|--------------|-------------|
| | Mold Power (C10=10 Ft) (C20=20 Ft) | Thermocouple (C10=10 Ft) (C20=20 Ft) | Mold Power Input* | Thermocouple | Power Input | Thermocouple | Combination |

* Includes Crimp Connectors **Order Power Input and Thermocouple or Combination

Standard Mainframe (“A” Suffix = Domestic or Export, “E” Suffix = CE Compliant)

1,2 & 3

| | | | | | | | |
|----|---|------------|-----------|----------|--------------|--------------|--------------|
| | Reference page 37 for cables and connectors | | | | | | |
| 5 | 1-MPCL05Cxxz | 1-TC05Cxxz | 1-PICL05z | 1-MTC05z | 1-PICL512TBz | 1-MTC005TBz | 1-PTCL005TBz |
| 8 | 1-MPCL08Cxxz | 1-TC08Cxxz | 1-PICL08z | 1-MTC08z | 1-PICL512TBz | 1-MTC008TBz | 1-PTCL008TBz |
| 12 | 1-MPCL12Cxxz | 1-TC12Cxxz | 1-PICL12z | 1-MTC12z | 1-PICL512TBz | 1-MTC012TBz | 1-PTCL012TBz |
| 16 | 2-MPCL08Cxxz | 2-TC08Cxxz | 2-PICL08z | 2-MTC08z | 2-PICL512TBz | 2-MTC008TBz | 2-PTCL008TBz |
| 20 | 1-MPCL08Cxxz | 1-TC08Cxxz | 1-PICL08z | 1-MTC08z | 2-PICL512TBz | 1-MTC008TBz | 1-PTCL008TBz |
| | 1-MPCL12Cxxz | 1-TC12Cxxz | 1-PICL12z | 1-MTC12z | 1-MTC012TBz | 1-PTCL012TBz | |
| 24 | 2-MPCL12Cxxz | 2-TC12Cxxz | 2-PICL12z | 2-MTC12z | 2-PICL512TBz | 2-MTC012TBz | 2-PTCL012TBz |
| 28 | 2-MPCL08Cxxz | 2-TC08Cxxz | 2-PICL08z | 2-MTC08z | 3-PICL512TBz | 2-MTC008TBz | 2-PTCL008TBz |
| | 1-MPCL12Cxxz | 1-TC12Cxxz | 1-PICL12z | 1-MTC12z | | 1-MTC012TBz | 1-PTCL012TBz |
| 32 | 1-MPCL08Cxx | 1-TC08Cxxz | 1-PICL08z | 1-MTC08z | 3-PICL512TBz | 1-MTC008TBz | 1-PTCL008TBz |
| | 2-MPCL12Cxx | 2-TC12Cxxz | 2-PICL12z | 2-MTC12z | | 2-MTC012TBz | 2-PTCL012TBz |
| 36 | 3-MPCL12Cxx | 3-TC12Cxxz | 3-PICL12z | 3-MTC12z | 3-PICL512TBz | 3-MTC012TBz | 3-PTCL012TBz |
| 40 | 2-MPCL08Cxxz | 2-TC08Cxxz | 2-PICL08z | 2-MTC08z | 4-PICL512TBz | 2-MTC008TBz | 2-PTCL008TBz |
| | 2-MPCL12Cxxz | 2-TC12Cxxz | 2-PICL12z | 2-MTC12z | | 2-MTC012TBz | 2-PTCL012TBz |
| 44 | 1-MPCL08Cxxz | 1-TC08Cxxz | 1-PICL08z | 1-MTC08z | 4-PICL512TBz | 1-MTC008TBz | 1-PTCL008TBz |
| | 3-MPCL12Cxxz | 3-TC12Cxxz | 3-PICL12z | 3-MTC12z | | 3-MTC012TBz | 3-PTCL012TBz |
| 48 | 4-MPCL12Cxxz | 4-TC12Cxxz | 4-PICL12z | 4-MTC12z | 4-PICL512TBz | 4-MTC012TBz | 4-PTCL12TBz |

High-Power Mainframe (“A” Suffix = Domestic or Export, “E” Suffix = CE Compliant)

| | | | | | | | |
|---|--------------|------------|-----------|----------|--------------|-------------|--------------|
| 2 | 1-MPCH23Cxxz | 1-TC05Cxxz | 1-PICH23z | 1-MTC05z | 1-PICH023TBz | 1-MTC005TBz | 1-PTCH023TBz |
| 3 | 1-MPCH23Cxxz | 1-TC05Cxxz | 1-PICH23z | 1-MTC05z | 1-PICH023TBz | 1-MTC005TBz | 1-PTCH023TBz |
| 5 | 1-MPCH05Cxxz | 1-TC05Cxxz | 1-PICH05z | 1-MTC05z | 1-PICH005TBz | 1-MTC005TBz | 1-PTCH005TBz |
| 6 | 1-MPCH06Cxxz | 1-TC08Cxxz | 1-PICH06z | 1-MTC08z | 1-PICH006TBz | 1-MTC008TBz | 1-PTCH006TBz |

Note: Replace xx with Cable Length (10 = 10 ft., 20 = 20 ft.)
 Replace z with Wiring (A = Domestic/Export, E = CE Compliant)



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