# Modulating Set Point Controls

*MCA-Elite: Modulates 4-20mA, 0-5V, 0-10V, 1-5V, and 2-10V Actuators*
*MCP-Elite: Modulates 0-135 Ohm Actuators*
*MCF-Elite: Modulates Floating Actuators*

DIGI-SPAN®

MC Series

Elite Series

## Description:

***Simple Affordable Modulating Set Point or Reset Controls for Temperature or Pressure.*** Well suited for radiant and process applications, the MC-*Elite* changes the position of a valve, burner, or variable speed drive in response to changes in sensor readings.

- ***Temperature, Pressure, Vacuum, or Humidity.*** The same MC-*Elite* control can be connected to an array of temperature, pressure, vacuum, and humidity sensors. This makes stocking MC-*Elite* easier than ever. Each MC-*Elite* is field selectable for a broad range of parameters. Just select or stock the sensors you need with your control.

- ***Standard and Customizable Reset Ratios.*** Utilizing the standard outdoor reset ratios or set point is built-in the MC-*Elite*. In addition, the controls come with a customizable reset ratio for applications where a standard reset ratio would not suffice.

- ***Enable/Disable.*** No Need to turn the control power off. The Enable/Disable terminals allow the use of external devices or switches to activate/deactivate the control operation.

- ***Simplified Menus on an Easy-to-Read 2-Line Digital Display.*** Now, with two 16 alphanumeric line display and easy-to-ready menus makes setting and understanding control operation a snap.

- ***Sensor Fault Output Status Selection.*** A feature that allows the user to select the output status when the sensor is disconnected or its reading is faulty.

- ***Can be Powered by 120VAC or 24VAC.*** The *Elite* Series is normally powered by 120VAC. However, it has an alternative 24VAC power inputs. No transformers are required.

HT# 056066-00B

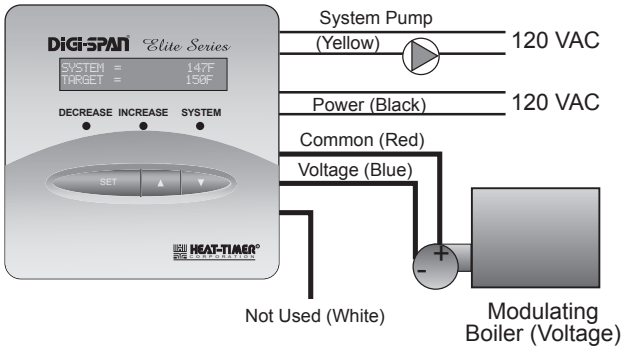
HEAT-TIMER® CORPORATION
20 New Dutch Lane, Fairfield, NJ 07004 973-575-4004 • Fax 973-575-4052 • http://www.heat-timer.com

# Applications:

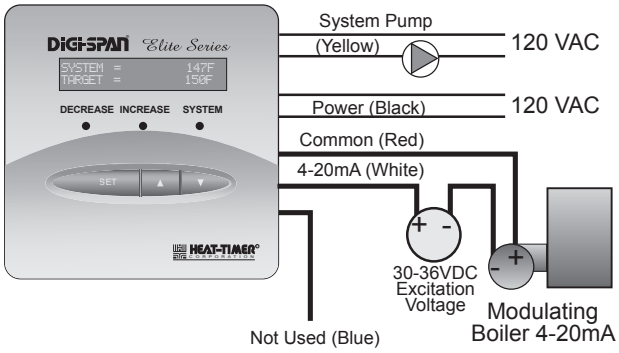
- ***Radiant Heating.*** The MC-*Elite* Series can control a mixing valve to regulate the temperature of the water entering the radiant tubing.
- ***Hydronic Heating or Cooling Loops.*** The MC-*Elite* Series can control either a mixing valve or a diverting valve to regulate the temperature of a hydronic loop.
- ***Steam to Water Heat-Exchangers.*** The MC-*Elite* Series provides precise temperature control of water by controlling the amount of steam entering the heat exchanger.
- ***Variable Speed Drive.*** The MC-*Elite* Series can be used to control the speed of a fan or pump to maintain a desired system temperature or pressure.
- ***Modulating Burner Control.*** The MC-*Elite* Series controls the firing rate of a modulating boiler to maintain a desired system temperature or pressure.
- ***Air Damper Control.*** The MC-*Elite* Series adjusts the opening of an air damper to control the space temperature or humidity.

## MCA-Elite: *Analog Signals: 4-20mA, 0-5V, 0-10V, 1-5V, 2-10V*

### MCA Modulating a Voltage Boiler

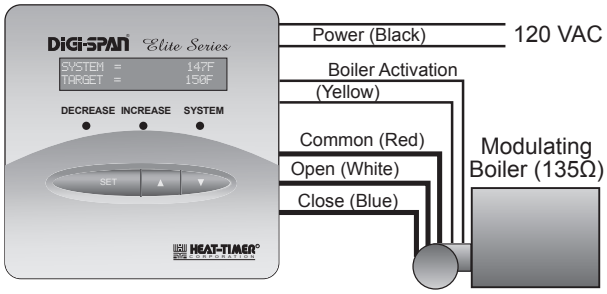



### MCA Modulating a 4-20mA Boiler



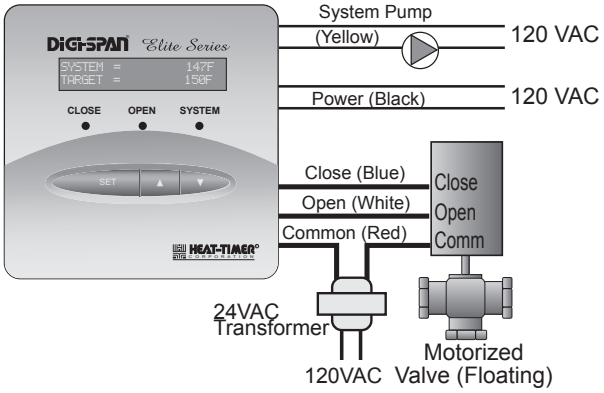

## MCP-Elite: *Proportional 135Ω Signal.*

### MCP Modulating a 135Ω Boiler




## MCF-Elite: *Floating Signal.*

### MCF Modulating a Floating Actuator




HT# 056066-00B

HEAT-TIMER® CORPORATION
20 New Dutch Lane, Fairfield, NJ 07004 973-575-4004 • Fax 973-575-4052 • http://www.heat-timer.com

# MCA-Elite Specifications:

**Voltage Input:** 120 VAC 60 Hz(2 Black wires) /24VAC 60 Hz (24VAC *terminals*) (Only One Power Source)
**Power Consumption:** 5 VA Max
**Operating Temperature:** from 20°F to 120°F
**Operating Humidity:** from 20% to 80%
**Dimensions:** 4"W x 4"H x 2½"
**Weight:** 1 pound
**Display:** Back Lite 2 Line Alphanumeric LCD Display
**Standard:** English or Metric
**Output Relay Ratings:** 1 Amp inductive (Maximum of 1/8 HP), 6Amp resistive at 120 VAC 60 Hz
**Control Modes:** Outdoor Reset, Set Point
**Reset Ratios:** 12 Standard ranging from 8:1 to 1:4 (Outdoor: System), and one Custom
**Setback:** from 0˚F (0˚C) to 80˚F (44˚C)
**Boost:** Yes (30Min), No
**Sensor Fault Operating Options:** Output On or Output Off
**Sensor Operating Range:** from -35˚F (-37˚C) to 250˚F (121˚C)
**Offset:** from -40˚F (-22˚C) to 40˚F (+22˚C)
**Minimum Target:** from 70˚F (21˚C) to 170˚F (77˚C)
**Maximum Target:** from 90˚F (32˚C) to 240˚F (116˚C)
**Set Point:** from -10˚F (-23˚C) to 230˚F (110˚C)
**Setback Input:** *Terminals T3+, T3-*
**Buttons:** 3 (Set, Up, Down)
**Enable/Disable:** *Terminals EXT+, EXT-*
**Pump Run-On:** from 0 to 60 minutes
**LED:** 3 LEDs (Left=Decrease/Close Middle=Increase/Open Right=System Relay)
**MCA System Relay Output:** 1 S.P.S.T (Yellow = Output 1)
**MCA Modulating Output:** 4-20mA (Requires External Excitation) (Red=Com, White=Signal)
Voltage (0-10VDC, 2-10VDC, 0-5VDC, 1-5VDC) (Red=Com, Blue=Voltage)
**Purge Delay:** from 0.0 to 10.0 minutes

# MCP-Elite Specifications:

**Voltage Input:** 120 VAC 60 Hz(2 Black wires) /24VAC 60 Hz (24VAC *terminals*) (Only One Power Source)
**Power Consumption:** 5 VA Max
**Operating Temperature:** from 20°F to 120°F
**Operating Humidity:** from 20% to 80%
**Dimensions:** 4"W x 4"H x 2½"
**Weight:** 1 pound
**Display:** Back Lite 2 Line Alphanumeric LCD Display
**Standard:** English or Metric
**Output Relay Ratings:** 1 Amp inductive (Maximum of 1/8 HP), 6Amp resistive at 120 VAC 60 Hz
**Control Modes:** Outdoor Reset, Set Point
**Reset Ratios:** 12 Standard ranging from 8:1 to 1:4 (Outdoor: System), and one Custom
**Setback:** from 0˚F (0˚C) to 80˚F (44˚C)
**Boost:** Yes (30Min), No
**Sensor Fault Operating Options:** Output On or Output Off
**Sensor Operating Range:** from -35˚F (-37˚C) to 250˚F (121˚C)
**Offset:** from -40˚F (-22˚C) to 40˚F (+22˚C)
**Minimum Target:** from 70˚F (21˚C) to 170˚F (77˚C)
**Maximum Target:** from 90˚F (32˚C) to 240˚F (116˚C)
**Set Point:** from -10˚F (-23˚C) to 230˚F (110˚C)
**Setback Input:** *Terminals T3+, T3-*
**Buttons:** 3 (Set, Up, Down)
**Enable/Disable:** *Terminals EXT+, EXT-*
**Pump Run-On:** from 0 to 60 minutes
**LED:** 3 LEDs (Left=Decrease/Close Middle=Increase/Open Right=System Relay)
**MCP System Relay Output:** 1 S.P.S.T (Yellow = Output 1)
**MCP Modulating Output:** (Red=Common, White=Open, Blue=Close)
**Purge Delay:** from 0.0 to 10.0 minutes
**MCA System Relay Output:** 1 S.P.S.T (Yellow = Output 1)



HEAT-TIMER® CORPORATION
20 New Dutch Lane, Fairfield, NJ 07004 973-575-4004 • Fax 973-575-4052 • http://www.heat-timer.com

# MCF-Elite Specifications:

**Voltage Input:** . . . . . .120 VAC 60 Hz(2 Black wires) /24VAC 60 Hz (24VAC *terminals*) (Only One Power Source)
**Power Consumption:** . . . . . .5 VA Max
**Operating Temperature:** . . . . . from 20°F to 120°F
**Operating Humidity:** . . . . . from 20% to 80%
**Dimensions:** . . . . . 4”W x 4”H x 2½”
**Weight:** . . . . . 1 pound
**Display:** . . . . . .Back Lite 2 Line Alphanumeric LCD Display
**Standard:** . . . . . .English or Metric
**Output Relay Ratings:** . . . . . 1 Amp inductive (Maximum of 1/8 HP), 6Amp resistive at 120 VAC 60 Hz
**Control Modes:** . . . . . Outdoor Reset, Set Point
**Reset Ratios:** . . . . . 12 Standard ranging from 8:1 to 1:4 (Outdoor: System), and one Custom
**Setback:** . . . . . from 0˚F (0˚C) to 80˚F (44˚C)
**Boost:** . . . . . Yes (30Min), No
**Sensor Fault Operating Options:** . . . . . Output On or Output Off
**Sensor Operating Range:** . . . . . from -35˚F (-37˚C) to 250˚F (121˚C)
**Offset:** . . . . . from -40˚F (-22˚C) to 40˚F (+22˚C)
**Minimum Target:** . . . . . from 70˚F (21˚C) to 170˚F (77˚C)
**Maximum Target:** . . . . . .from 90˚F (32˚C) to 240˚F (116˚C)
**Set Point:** . . . . . from -10˚F (-23˚C) to 230˚F (110˚C)
**Setback Input:** . . . . . .*Terminals T3+, T3-*
**Buttons:** . . . . . 3 (Set, Up, Down)
**Enable/Disable:** . . . . . *Terminals EXT+, EXT-*
**Pump Run-On:** . . . . . .from 0 to 60 minutes
**LED:** . . . . . 3 LEDs (Left=Decrease/Close Middle=Increase/Open Right=System Relay)
**MCF System Relay Output:** . . . . . .1 S.P.S.T (Yellow = Output 1)
**MCF Modulating Output Relay Wire Colors:** . . . . . 2 S.P.S.T (Red=Common, White=Open, Blue=Close)

| Item Description | Part # |
|---|---|
| **MCA-Elite (4-20mA, 0-5V, 0-10, 1-5V, 2-10V) Modulating signals** (Sensors ordered separately) | **929160-UA** |
| **MCP-Elite (135Ω Modulating signal)** (Sensors ordered separately) | **929165-UA** |
| **MCF-Elite (Floating Modulating signal)** (Sensors ordered separately) | **929190-UA** |
| **Brass Tube Temperature Sensor** | **904250-00** |
| **3-In-1 Immersion Temperature Sensor** | **904220-00** |
| **Humidity Sensor** | **904035-00** |
| **Vacuum Sensor (0 - 30 Hg)** | **904317-00** |
| **Pressure Sensor (0 - 30 PSI)** | **904310-00** |
| **Pressure Sensor (0 - 100 PSI)** | **904312-00** |
| **Pressure Sensor (0 - 200 PSI)** | **904311-00** |
| **Pressure Sensor (0 - 300 PSI)** | **904313-00** |

HT# 056066-00B

c UL us LISTED

ISO 9001:2008 CERTIFIED

HEAT-TIMER® CORPORATION
20 New Dutch Lane, Fairfield, NJ 07004 973-575-4004 • Fax 973-575-4052 • http://www.heat-timer.com