MICROFUSION
MULTIZONE SYSTEMS
EXTERNAL PANEL MOUNT / LIQUID COOLED

- Multizone system
- Up to 10 MicroFUSION units
- External panel mount or liquid-cooled heatsink
- Reduces enclosure size
- Reduces air conditioning requirements by moving heat outside the enclosure
- UL, cUL, CE, RoHS, and 100kA SCCR certifications
- IP65, UL Type 4

c UL us LISTED · CE · RoHS COMPLIANT · Pb Pb-Free · 100kA SHORT CIRCUIT CURRENT RATING

MicroFUSION is an ultra-compact high-performance microprocessor-based power controller, available in single or three phase models to control AC loads.

Resistive or transformer-connected loads can be controlled in either Phase Angle, Zero Cross, or Zero Cross Transformer (ZCT) Mode. Output is controlled linearly with respect to command signal and can be set to the average or RMS value of the voltage and current, as well as true instantaneous power or external feedback.

MicroFUSION Series power controllers are available in current ratings from 16, 32, 50, 80 amps AC. Auto-ranging voltage circuitry enables mains supply voltage from 24-600 VAC, (45-65 Hz) eliminating the need for hardware jumpers or stocking multiple controllers for international voltages. A separate power source supplies the control electronics and maintains critical communications to your control system when the mains are absent.

SPECIFICATIONS

PERFORMANCE		
	Standard	**High Performance Option**
Setpoint Resolution	10,000 counts	Selectable 10,000 or 64,000 counts
Internal Control Loop Resolution	16,000 counts	64,000 counts
Output Resolution	12,000 counts @ 50Hz, 10,000 counts @ 60Hz	50,000 counts @ 50Hz, 42,000 counts @ 60Hz
Accuracy (Full Conduction)		
Voltage	3% of span	0.5% of span
Current	3% of span	0.5% of span
Power	3% of span	1% of span
Output Linearity	4% from 5 to 100% output range	1% from 5 to 100% output range
Accuracy	A +10% to -15% line voltage change will result in a max output change of 0.5% from 5 to 100% output range	A +10% to -15% line voltage change will result in a max output change of 0.05% from 5 to 100% output range
Temperature Drift	Output shall not change greater than 0.5% per degree C max over the operating temperature range from 5 to 100% output range	Output shall not change greater than 0.2% per degree C max over the operating temperature range from 5 to 100% output range

POWER	
Line Voltage (Auto Ranging)	24 - 600 Vac (Nominal) +10% / -15% (Contact factory for other options)
Line Frequency (Auto Ranging)	45 - 65 Hz
Current Rating- Peak Surge	20X frame rating
Minimum Hold/Latch Current	500 mA
SCR Rating (PIV)	1600 V peak forward & reverse
Fusing	Optional external Class T, branch-rated, touch-safe fusing
Thermal	Integrated heat sink thermal sensor
Current Limit	20% – 105% of continuous rating of Frame Amp Rating
Current Trip	50% - 450% of continuous rating
Power Dissipation	1.3 Watt per amp of load current per phase
Control Power / Operates Internal Control Electronics	24 Vdc +10 / -15%

ENVIRONMENTAL	
Surrounding Air Operating Temperature - External Panel Mount	32°F [0°C] - 122°F [50°C] with no derating
Surrounding Air Operating Temperature - Liquid Cooled	32°F [0°C] - 140°F [60°C] with no derating
Humidity	20% to 90% RH Non-Condensing
Rated Operating Altitude	Up to 6000 ft [1750m] at full rated current
Contaminates	ROHS Compliant, CE Pollution Degree 2
Storage Temperature	- 4 to 176°F [- 20 to 80°C]

DC POWER CONSUMPTION	
16 - 80 Amp Single Phase	9 Watts per controller

RELIABILITY	
Mean Time Between Failure (MTBF)	Designed for 50,000 Hours

SCCR		
Frame 1 Ø	**Recommended Fusing**	**SCCR Rating**
16 Amp	20 Amp Fast Acting J or T	100 kA
32 Amp	40 Amp Fast Acting J or T	100 kA
50 Amp	60 Amp Fast Acting J or T	100 kA
80 Amp	100 Amp Fast Acting J or T	100 kA

COOLING

External Panel Mount	Natural Convection
Liquid Cooled	Flow rate: 1 GPM [3.79 LPM] minimum Maximum inlet temperature: 122° F [50° C] Maximum pressure: 60 PSI [4.137 Bar] Up to 50% glycol water solution

Pressure Drop

3 Zone	2.64 PSI at 1 GPM
6 zone	2.9 PSI at 1 GPM
10 zone	3.35 PSI at 1 GPM

Particulate filtered water containing less than:

Mineral	Recommended Limit
Calcium	< 50 PPM
Magnesium	< 50 PPM
Total Hardness	< 100 PPM (5 Grains)
Chloride	< 25 PPM
Sulfate	< 25 PPM

A corrosive inhibitor must be used for deionized or demineralized water

ENCLOSURE PROTECTIVE RATING

International	IP 20
Remote Display	IP 65, UL Type 1 & 12
External Panel Mount	IP 65, UL Type 4
Liquid Cooled	IP 65, UL Type 4

ISOLATION

Signal to Line/Load	3750 Vac minimum
Line/Load to Ground	2500 Vac minimum
Signal to Ground	1500 Vac minimum
Line to Load	1400 Vac minimum
Network	1500 Vac minimum
USB	2500 Vac minimum
Signal to Processor	1500 Vac minimum
Remote Display	2500 Vac minimum

All controllers have 100kA when using less than or equal to 100 Amp class J or T. Installed in enclosure with two latches, 150% of controller size.

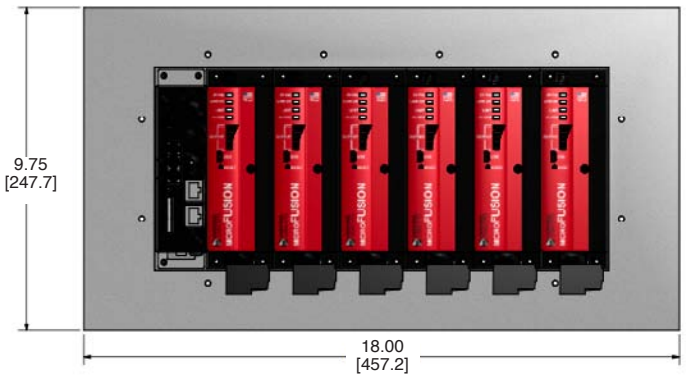
Control Concepts recommends sizing fuses approximately 125% frame rating.

DIMENSIONS

Dimensions: Inches [mm]

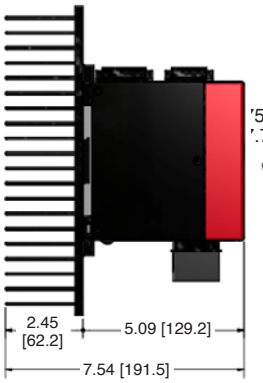
EXTERNAL PANEL MOUNT

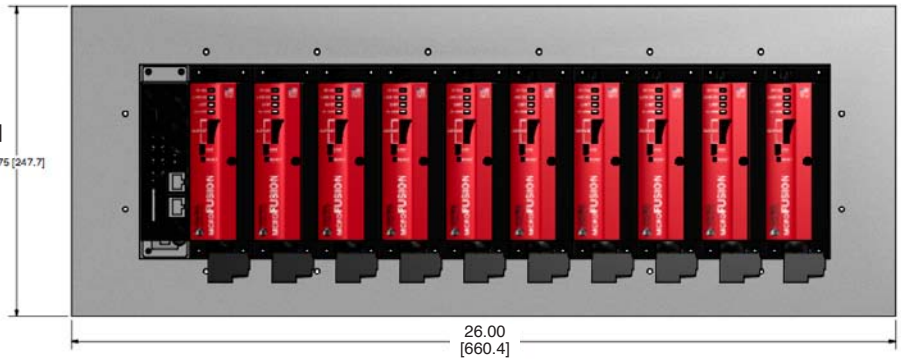
Single Phase - 6 Zone



NOTE: controllers are pictured with an optional connect fieldbus interface.

Single Phase - 10 Zone



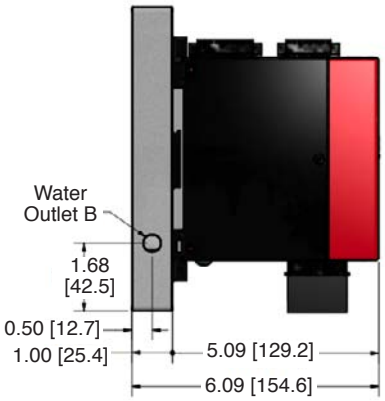


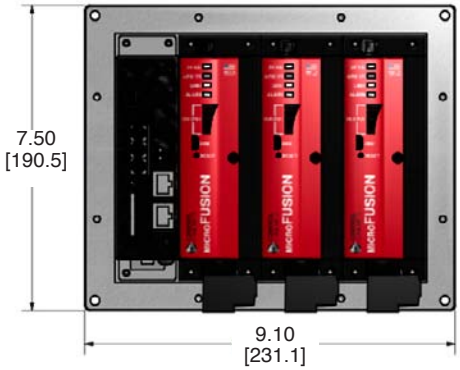
DIMENSIONS

LIQUID COOLED

Dimensions:
Inches [mm]

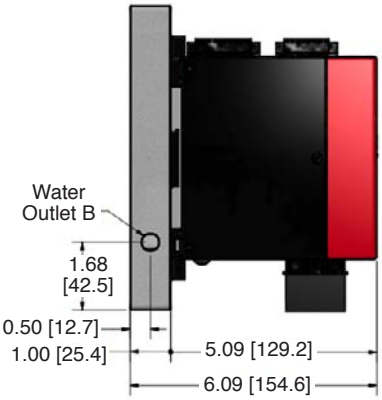
Single Phase - 3 Zone

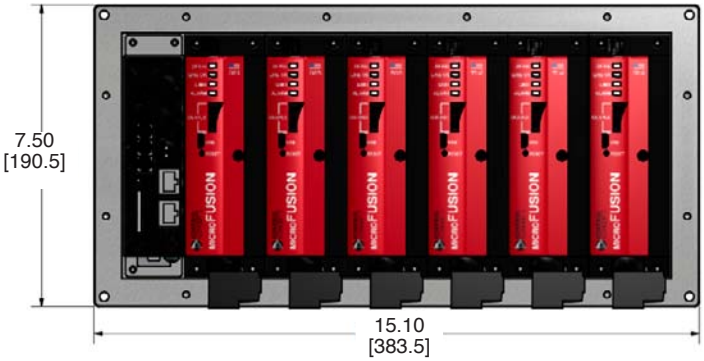




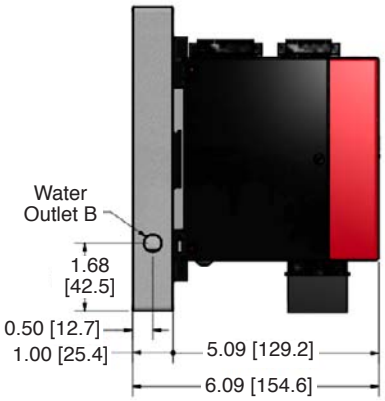
NOTE: controllers are pictured with an optional connect fieldbus interface.

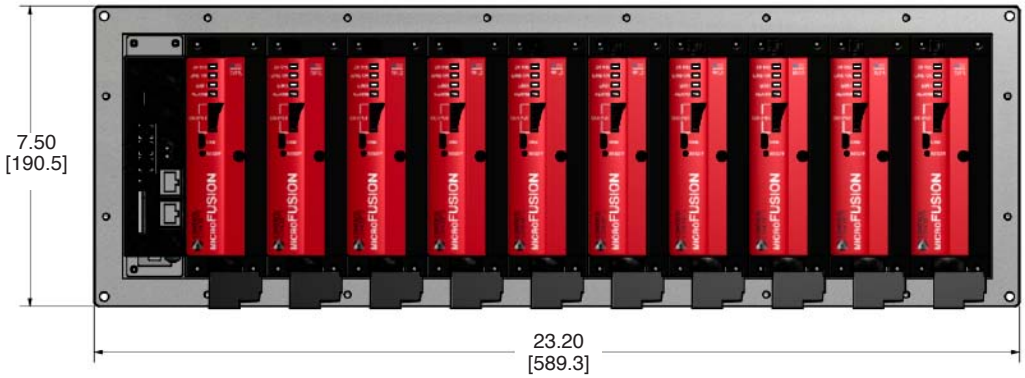
Single Phase - 6 Zone





Single Phase - 10 Zone





MODEL NUMBERS

Select heatsink type and number of zones to create a system model number, then create model numbers for each individual unit.

SYSTEM MODEL NUMBER

uF □□□□-■■■■■■

Heatsink

EM = External Panel Mount LC = Liquid-Cooled

Configuration

See Pages 6-7 to determine the configuration letter.

Water Inlet Position (Fieldbus Mounts Opposite Side)

L = Left Side R = Right Side 0 = External Mount

Unique Identifier

Control Concepts will assign unit a unique 6-digit number

CONTROLLER MODEL NUMBER

uF1 □□□□□-□□-□□□□□

Board Type

SX = Standard. See feature comparison on previous page.
HX = High performance. See feature comparison on previous page.

Terminal

T = Pluggable terminal block
R = Ring terminal [1]

Frame Style

C = 16 - 32A - (External panel mount / Liquid-cooled)
D = 50 - 80A - (External panel mount / Liquid-cooled)

Option Board

0 = None E = Modbus TCP
I = EtherNet/IP N = PROFINET

Amp Size

16 = 16 Amps 32 = 32 Amps
50 = 50 Amps 80 = 80 Amps (Only available with liquid-cooled heatsink)

Performance

Available with SX:
S = Standard
L = Adjustable Current Limit
Available with HX:
L = Adjustable Current Limit, current feedback, load voltage feedback, and voltage limit
P = High Performace (Includes Load Voltage Feedback, True Power Control, Current Limit, Power Limit, High Resolution Control Loop)

I/O

0 = None (Only applicable for SX; HX board is equipped with an alarm relay by default)
1 = Alarm Relay (1x Form C)
2 = General Purpose Input / Analog Input Channel 2 / Pulse Width Modulation Input
3 = Both

Retransmits

0 = None
R = Retransmits [2] (Two 16-bit analog retransmits for voltage, current, or power)

Sync

0 = None
S = Digital SYNC-GUARD™

Zero Cross Transformer Mode

0 = None
Z = Zero Cross Transformer Mode [2]

[1] Contact factory for availability
[2] Only available with HX type board

AMP CONFIGURATION

LIQUID-COOLED (LC)

		Positions									
Amp Configuration	**Max Zones**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A	3	80A	80A	80A							
B	6	80A	80A	80A	80A	80A	80A				
C	10	80A	80A	80A	80A	80A	80A	80A	80A	80A	80A

Liquid cooled heatsinks can have up to 80A in each position.

Maximum position and ratings listed. Configurations with fewer zones and/or lower current ratings available.

EXTERNAL PANEL MOUNT (EM)

	Positions					
Amp Configuration	**1**	**2**	**3**	**4**	**5**	**6**
A	16A	16A	16A	16A	16A	16A
B	16A	16A	16A	-	32A	-
C	32A	-	32A	-	32A	-
D	16A	16A	-	-	50A	-
E	-	-	50A	-	50A	-

(Dash signifies empty position)

External panel mount heatsinks are limited to specific amp configurations.

Maximum position and ratings listed. Configurations with fewer zones and/or lower current ratings available.

AMP CONFIGURATIONS

EXTERNAL PANEL MOUNT (EM)

	Positions / Number of Zones									
Amp Configuration	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
F	16A	16A	16A	16A	16A	16A	16A	16A	16A	16A
G	16A	16A	16A	16A	16A	16A	16A	16A	-	32A
H	16A	16A	16A	16A	16A	16A	-	32A	-	32A
I	16A	16A	16A	16A	-	32A	-	32A	-	32A
J	16A	16A	-	32A	-	32A	-	32A	-	32A
K	-	32A	-	32A	-	32A	-	32A	-	32A
L	16A	16A	16A	16A	16A	16A	-	-	-	50A
M	16A	16A	-	-	-	50A	-	-	-	50A
N	-	32A	-	-	-	50A	-	-	-	50A
O	-	32A	-	32A	-	32A	-	-	-	50A
P	16A	16A	16A	16A	-	32A	-	-	-	50A
Q	16A	16A	-	32A	-	32A	-	-	-	50A
R	50A	-	-	-	-	50A	-	-	-	50A

(Dash signifies empty position)

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Maximum position and ratings listed. Configurations with fewer zones and/or lower current ratings available.

CONTACT/ORDERING INFORMATION

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