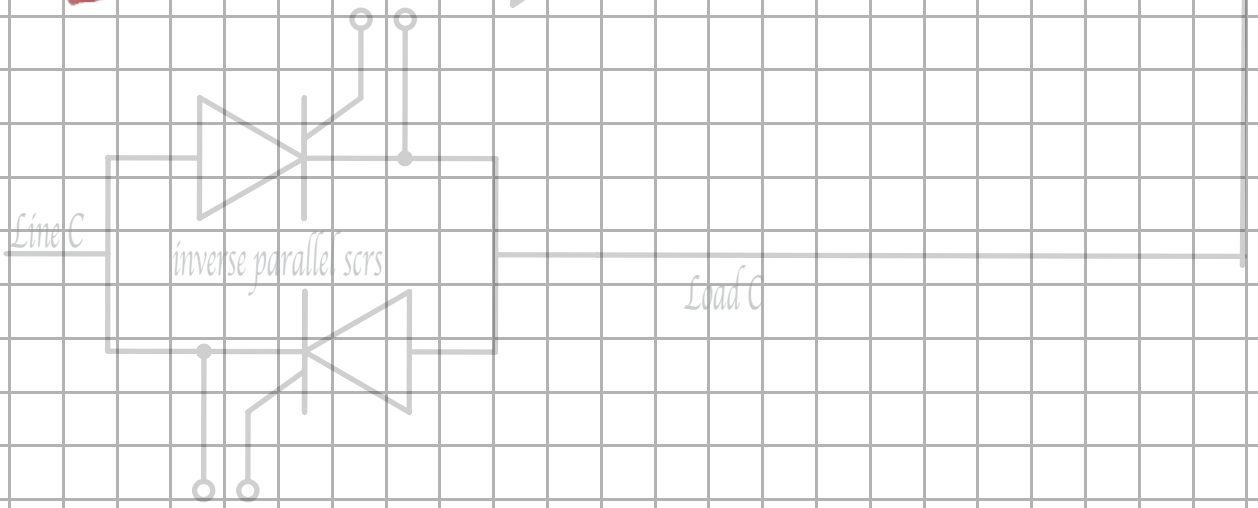




FUSION

SCR POWER CONTROLLERS





FEATURES

Auto-Ranging Input Voltage

24 - 600 VAC, 45 - 65 Hz

AC or DC Output

AC Models: 50 - 1200 Amps

DC Models: 45 - 1400 Amps

Analog Interface (Two Analog Inputs)

Standard setpoint ranges: 0 - 5 Vdc, 4 - 20 mA

Field Scalable 0 - 10 Vdc , 0/4 - 20 mA , or POT*

Optional Fieldbus Interface

Modbus TCP (Ethernet)

PROFINET

EtherNet/IP

Integrated or Remote Display

Displays Setpoints, Line / Load Voltage,

Load Current, Load Power, Alarms

Control Features

Digital Controller / Phase Lock Loop Timing

Zero-Cross / Phase Angle / Burst Mode

Soft Start

Output Limits: Voltage, Current, Power

Missing Cycle Detection

TRANS-GUARD™, SYNC-GUARD™

Alarms

Overtemp / Shorted SCR** / Phase Loss /

Over Current Trip

Two form C relay outputs for alarms

Optional Auxiliary I/O Card

Up to two retransmit channels of voltage,

current, or power

Easy Setup via Plug-n-Play USB

Load / Save Configurations

Diagnostics with Chart and Log Operations

* Other scaling options available via control panel software. Contact factory for information.

** User selectable. Feature may be disabled in case of nuisance shorted SCR warnings

CERTIFICATIONS



DESCRIPTION

FUSION Series power controller is a modular digital power controller capable of single or three phase operation with either AC or DC loads. Loads can be controlled by either phase angle, zero-cross, or burst modes for operation of resistive or transformer-connected loads. Output to the command signal is controlled linearly and can be set to the average or RMS value of the voltage and current, as well as true instantaneous power or external feedback.

FUSION Series power controllers are available in current ratings from 50 - 1200 amps AC or 45 - 1400 amps DC. 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.

An integrated display and on-board diagnostics make operation and trouble shooting simple. Limits, set-points, and alarm conditions can be easily viewed and customized.

DESCRIPTION, CONTINUED

A plug-n-play USB interface and free FUSION Control Panel software for the PC further simplifies installing and configuring the controller to your application. OEMs, for example, can duplicate controller settings by simply loading a configuration file saved from a previous unit.

Setpoints can be controlled through the standard analog or optional Fieldbus interface. The factory-configured analog setpoint signal ranges are 0 - 5 Vdc and 4 - 20 mA, both of which are field scalable from 0 - 10 Vdc or 0 - 20 mA.

The Fieldbus interface options include Modbus TCP (Ethernet), PROFINET, or EtherNet/IP. These can be used to communicate with a PLC or factory control system. For multi zone controllers consisting of 3 or 4 zones, a Fieldbus interface is required.

Parameters can be easily viewed and controlled through the onboard display. For additional convenience, the display can also be remotely mounted on an electrical enclosure door. (See below.)

UTILIZING REMOTE CONTROL

A remote display kit is available from Control Concepts, Inc, allowing you to mount the display on the outside of an electrical enclosure and eliminating costly Amp meters, switches, and associated wiring and labor.

The display is rated IP 65 and UL type 1 and 12 to withstand water or dust in demanding factory conditions.

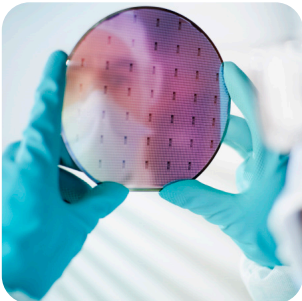
For a complete description and ordering information, see Page 6.



APPLICATIONS

Constant Resistive Loads
(Nickel Chromium)

Variable Resistive Loads
Silicon Carbide
Molybdenum Disilicide
Graphite
Tungsten Lamps



Transformer Coupled Loads

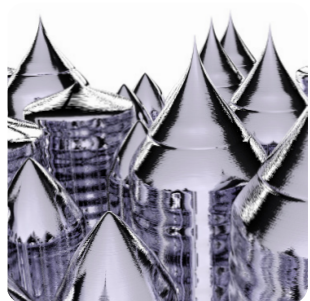
Inductive
(Not Intended for Motor Applications)

Gas Discharge
Ultra Violet



Electron Beam

Crystal Growing and Processing



PERFORMANCE SPECIFICATIONS

| POWER | | | | | | | |
|---|---|-----------------------|--|----------------------|--|----------------------|---|
| Line Voltage (Auto Ranging) | 24 - 600 Vac (Nominal) +10% / -15% * | | | | | | |
| Line Frequency (Auto Ranging) | 45 - 65 Hz | | | | | | |
| Frame Current Ratings (Amps) | <table border="0"> <tr> <td>I Continuous RMS (AC)</td> <td>50 80 100 130 160 200 240 320 400 500 650 800 1000 1200</td> </tr> <tr> <td>I Continuous DC (1Ø)</td> <td>45 90 145 220 360 720 1080</td> </tr> <tr> <td>I Continuous DC (3Ø)</td> <td>60 120 195 290 490 975 1400</td> </tr> </table> | I Continuous RMS (AC) | 50 80 100 130 160 200 240 320 400 500 650 800 1000 1200 | I Continuous DC (1Ø) | 45 90 145 220 360 720 1080 | I Continuous DC (3Ø) | 60 120 195 290 490 975 1400 |
| I Continuous RMS (AC) | 50 80 100 130 160 200 240 320 400 500 650 800 1000 1200 | | | | | | |
| I Continuous DC (1Ø) | 45 90 145 220 360 720 1080 | | | | | | |
| I Continuous DC (3Ø) | 60 120 195 290 490 975 1400 | | | | | | |
| Current Rating- Peak Surge | 20X continuous rating | | | | | | |
| Minimum Hold/Latch Current | 1 A RMS | | | | | | |
| SCR Rating (PIV) | 1600 V peak forward & reverse | | | | | | |
| Fusing | External Required, compliant with UL, CE or Local Authority | | | | | | |
| 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 | 100 - 240 Vac 50/60 Hz | | | | | | |

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

| ENCLOSURE PROTECTIVE RATING | |
|------------------------------------|-----------------------|
| International | IP 20 |
| Removable Display | IP 65, UL Type 1 & 12 |

| ENVIRONMENTAL | |
|---------------------------------------|--|
| Surrounding Air Operating Temperature | 32°F [0°C] - 122°F [50°C] |
| 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 (only non-conductive pollution occurs) |
| Storage Temperature | - 4 to 176°F [- 20 to 80°C] |

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

* Contact factory for other options

MODEL NUMBER IDENTIFICATION

FUSION - - - - - -

Type of Controller _____

- ZC - Zero Cross
- PA - Phase Angle
- DC - Direct Current

Number of Legs of Control _____

- 1 - 1 Leg
- 2 - 2 Leg (ZC only)
- 3 - 3 Leg

Module Amperage Selections _____

| AC Frame Size | | | |
|---------------------|------|------------|------------|
| Current Size (Amps) | 1Ø | 3Ø - 2 Leg | 3Ø - 3 Leg |
| 50 | 1000 | 1100 | 1110 |
| 80 | 2000 | 2200 | 2220 |
| 100 | 3000 | 3300 | 3330 |
| 130 | 4000 | 4400 | 4440 |
| 160 | 5000 | 5500 | 5550 |
| 200 | 6000 | 6600 | 6660 |
| 240 | 7000 | 7700 | 7770 |
| 320 | 8000 | 8800 | 8880 |
| 400 | 9000 | 9900 | 9990 |
| 500 | A000 | AA00 | AAA0 |
| 650 | B000 | BB00 | BBB0 |
| 800 | C000 | CC00 | CCC0 |
| 1000 | D000 | DD00 | DDD0 |
| 1200 | E000 | EE00 | EEE0 |

| DC Frame Size | | |
|---------------------|-------|-------|
| Current Size (Amps) | 1Ø DC | 3Ø DC |
| 45 | 1000 | - |
| 60 | - | 1110 |
| 90 | 3000 | - |
| 120 | - | 3330 |
| 145 | 5000 | - |
| 195 | - | 5550 |
| 220 | 7000 | - |
| 290 | - | 7770 |
| 360 | 9000 | - |
| 490 | - | 9990 |
| 720 | C000 | - |
| 975 | - | CCC0 |
| 1080 | E000 | - |
| 1400 | - | EEE0 |

Factory Industrial Communications* _____

- 0 - None
- E - Modbus TCP (Ethernet)
- I - Ethernet/IP
- N = PROFINET
- Discontinued*
- S - Modbus RTU (RS-485)
- P - PROFIBUS
- D - DeviceNet

*This is in addition to USB, which comes standard on all controllers.

Configuration Data (supplied by Control Concepts, Inc.) _____

Includes configuration data such as load configurations, firing modes, feedback, limits, setpoints, ramp rates, etc.

- 0000 - Standard
- 0001 - 3 Phase Controller with a Inside Delta Load
- 0002 - 3 Phase Controller with a 4 Wire Wye Load

Option Card _____

- 0000 - No option card
- 1000 - Auxiliary I/O expansion card [Details found in Installation & Maintenance Manual]

| Examples of Controllers | |
|---|--|
| FUSION - PA - 3 - 6660 - 0 - 0000 - 0000 Three Phase, Three Leg, Phase Angle, 200 Amps | FUSION - DC - 3 - EEE0 - 0 - 0000 - 0000 Three Phase Full Wave Bridge, 1400 Amps DC |
| FUSION - PA - 1 - A000 - S - 0000 - 0000 Single Phase, Phase Angle, 500 Amps, Modbus RTU | FUSION - ZC - 2 - 1100 - 0 - 0000 - 1000 Three Phase, Two Leg, Zero Cross, 50 Amps, Aux I/O Card with a standard configuration |

Custom configurations are available. Contact factory with special requirements and for availability.

This may require a "SP

DIMENSIONS

DIMENSIONS ARE IN INCHES [mm], LISTED HEIGHT x WIDTH x DEPTH

| | 45-495 Amp | 500-1400 Amp |
|-------------------|--|---|
| Single Phase AC | 14.03 [356.5] x 5.96 [151.4] x 9.57 [243.0] | 20.49 [520.3] x 9.22 [134.1] x 11.21 [284.7] |
| Single Phase DC | 14.03 [356.5] x 12.87 [326.9] x 9.57 [243.0] | 20.49 [520.3] x 20.02 [508.5] x 11.21 [284.7] |
| Three Phase 2 Leg | 14.03 [356.5] x 9.61 [244.1] x 9.57 [243.0] | 20.49 [520.3] x 16.12 [409.5] x 11.21 [284.7] |
| Three Phase 3 Leg | 14.03 [356.5] x 13.27 [337.1] x 9.57 [243.0] | 20.49 [520.3] x 23.03 [585.0] x 11.21 [284.7] |
| Three Phase DC | 14.03 [356.5] x 20.18 [512.6] x 9.57 [243.0] | 20.49 [520.3] x 33.83 [859.3] x 11.21 [284.7] |



ACCESSORIES

AUXILIARY I/O CARD

Retransmit

- 2 Analog output channels
- Scalable 0-10V dc or 0-20mA with up to 15 Vdc compliance voltage
- Each channel may be assigned either the RMS or AVG value of the load voltage, load current, or true instantaneous load power

Digital I/O

- 2 Digital inputs (TTL compatible, pull up to 5V through a 10KΩ resistor)
- 2 Digital Outputs (Relay driver transistor based, Open collector that sinks up to 48 Vdc at 150 mA)

FIELD BUS INTERFACE

MODBUS TCP (Ethernet), DeviceNet, or EtherNet/IP, or PROFINET. Simplify your cabling, eliminate A/D conversion error, and gain access to monitor information. In the model number, use:

- I for EtherNet/IP
- D for DeviceNet
- E for Modbus TCP (Ethernet)
- N for PROFINET

REMOTE DISPLAY

- Controller display is mountable in a 1/4 DIN cutout
- UL-type 1 & 12 ratings, IP65
- Outside Dimensions: 4.156 [105.6] x 4.156 [105.6]
- Display Mounting Kit includes: Gasket, display retainer with screws, shielded cable, ferrite, and empty replacement display with CCI logo
- Sizes: 25 ft [7.62m] (CCI P/N: SMAFUSION-RD25)
5 ft [1.52m] (CCI P/N: SMAFUSION-RD5)

USB CABLE

- 15 ft [4.92m] USB Cable (CCI P/N: 0058004-0000-15)

CONTACT/ORDERING INFORMATION

TEL: (952) 474-6200 | (800) 765-2799
FAX: (952) 474-6070 | www.ccipower.com
8077 Century Blvd, Chanhassen, MN 55317, USA

