ACPC

Advanced Modular SCR Power Controller

- 40A—600A Models Available
- 480Vac, 600Vac, & 690Vac Options
- 1P, 3P 2-Leg, or 3P 3-Leg
- 100KA SCCR Rating
- Zero Cross (Fixed Cycle, Burst Fire, Half Single Cycle) & Phase Angle Firing Capability
- Current Limiting
- Multiple Analog Input Options Including 0-5V, 0-10V, 0-20mA, 4-20mA, PWM & Potentiometer
- Analog Retransmit
- V, V2, I, I2, P Feedback Monitoring
- Built In Fusing
- Total & Partial Interrupted Load Alarm
- Default Modbus RS-485 Communications
- Communication Expansion Slot Capable of Profibus, Modbus TCP/RTU, Realtime Ethernet IP, EtherCat, CanOpen, ProfiNet
- Add On Keyboard For Programming & Monitoring
- C-PWR PC Configuration Software
- SCR Overtemperature & Shorted SCR Alarm
- UL, cUL, CE Marking

Note:
USB to RS485 Programming cable is not included, see page H-7 for ordering information.

Description

The ACPC Series Advanced SCR Power Controller offers modular single phase, three phase 2-Leg, or three phase 3-Leg power control from 40A to 600A. All models feature Zero Cross and Phase Angle firing capability making the ACPC extremely versatile in the industry. Multiple input options are featured, including 0-5V, 0-10V, 0-20mA, 4-20mA, PWM, and 1Kohm to 10Kohm poten-tiometer signal. Programmable analog outputs are included to allow retransmission of critical process details.

Communications

Modbus RTU/RS485 communications are outfitted by default, but with PLC's and integrated networks being commonplace, the ACPC can host a number of additional fieldbus communications including Modbus TCP, Profibus, ProfiNet, Ether-net IP, DeviceNet, EtherCat, and CANopen. Each of these fieldbus cards can be installed at time of order or outfitted at a later date.
This makes it extremely easy to adapt the ACPC to any host network.

Description

The ACPC offers a full suite of diagnostic and monitoring capabilities to make this the most versatile controller Chromalox has to offer. Full thermal and electrical monitoring allows users to anticipate failures and malfunctions so corrective steps can be taken in a timely manner. With each zone outfitted with an independent current transformer, full diagnostics can be performed from loop break alarm, heater break, SSR short circuit, input opening or short circuit, and even over temperature alarm

Applications

- Packaging
- Thermoforming
- Heat treatment
- Mold & dye heating/cooling
- HVAC
- Chemical Processing
- Textile production
- Multizone Furnaces
- Dryers
- Industrial Ovens

And many more…

ACPC

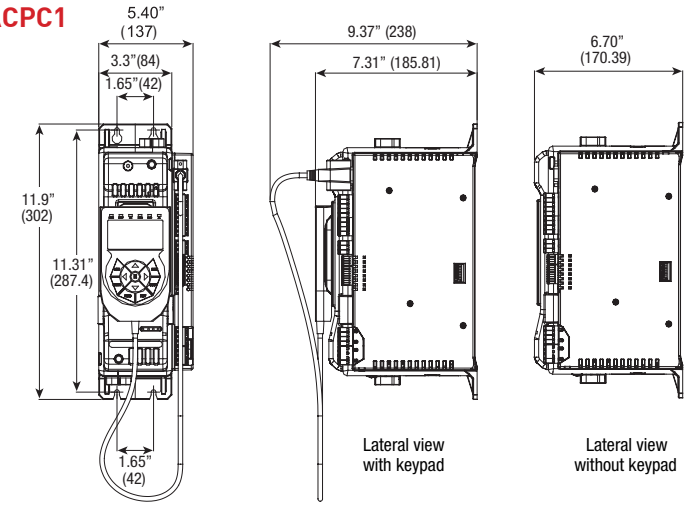
Advanced Modular SCR Power Controller

Weights Lbs (kg)

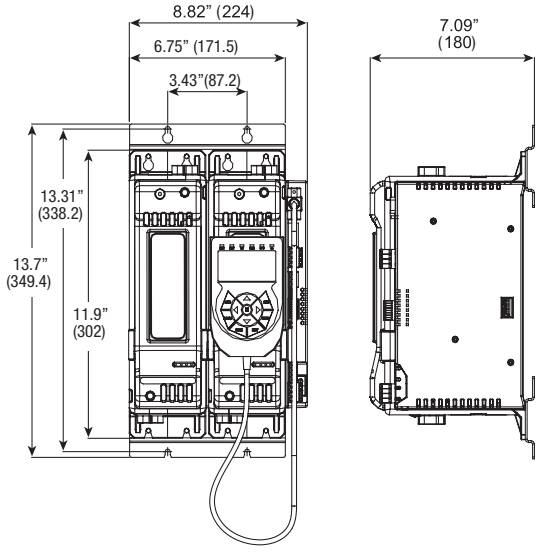
Model	Amps	Weight Lbs (kg.)
ACPC1	40/60/100	7.05 (3.2kg)
ACPC2	40/60/100	11.46 (5.2kg)
ACPC3	40/60/100	15.87 (7.2kg)
ACPC1	150/200/250/300	7.94 (3.6kg)
ACPC2	150/200/250/300	13.23 (6.0kg)
ACPC3	150/200/250/300	18.52 (8.4kg)

ACPC 40A—300A Dimensions, In (mm)

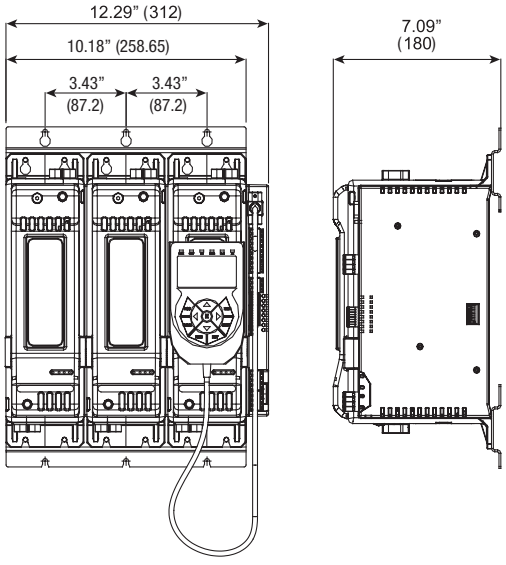
ACPC1



ACPC2



ACPC3



ACPC

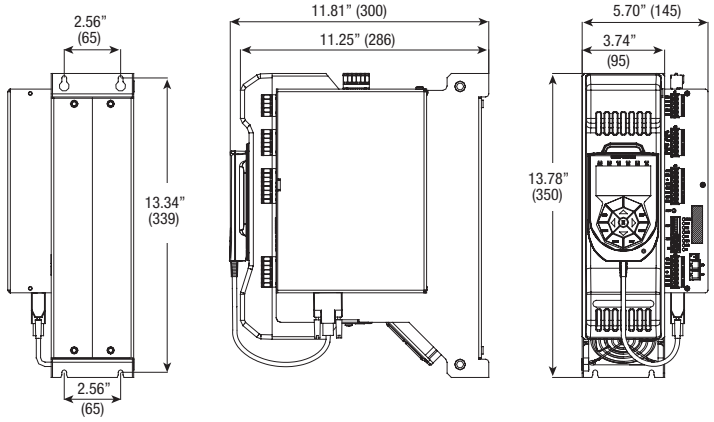
Advanced Modular SCR Power Controller

Weights Lbs (kg)

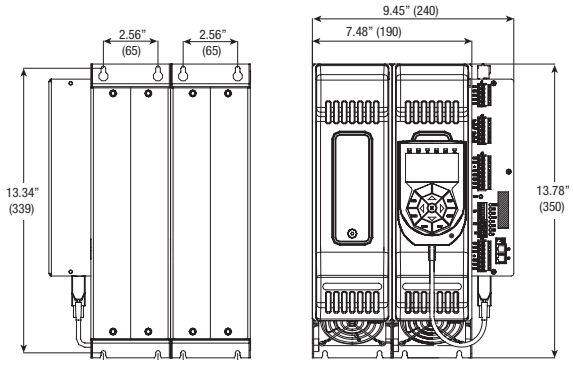
Model	Amps	Weight Lbs (kg.)
ACPC1	400	17.63 (8 Kg)
ACPC2	400	34.17 (15.5 Kg)
ACPC3	400	49.60 (22.5 Kg)
ACPC1	500/600	24.25 (11kg)
ACPC2	500/600	46.30 (21kg)
ACPC3	500/600	68.34 (31kg)

ACPC 400A—600A Dimensions, In (mm)

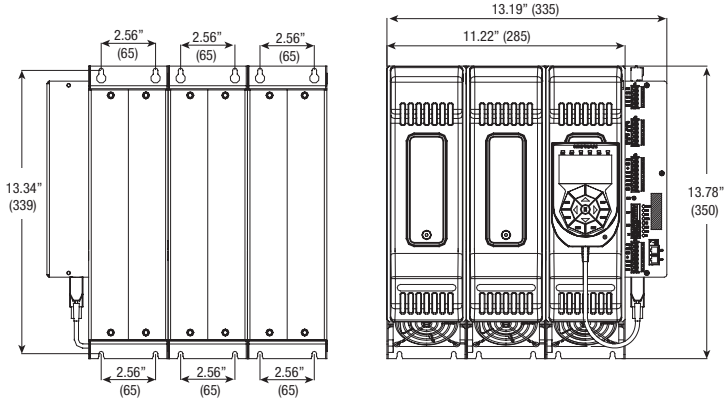
ACPC1



ACPC2



ACPC3



ACPC Advanced Modular SCR Power Controller *(cont'd.)*

Technical Data

Voltage	
Nominal Voltage	480Vac (max range 90-530Vac), 600Vac (max range 90-660Vac), 690Vac (max range 90-760Vac)
Frequency	Nominal 50-60Hz
Non-repetitive Voltage	1200 Vpk (480V models) / 1600 Vpk (600 & 690 Vac)
Control Analog Inputs	
Voltage	0-5 Vdc, 0-10Vdc (impedance > 100 kohm)
Current	0-20mA, 4-20mA (impedance 125 ohm)
Potentiometer	1-10 Kohm (auto-fed by 5V from ACPC)
Digital Inputs	
Range	5-30V max 7mA
PWM Input Control	Input 1: 0.03 - 100Hz, Inputs 2 and 3: 0.03 - 1Hz
Voltage Line Range	
Range	90V Nominal Product
Frequency	50/60Hz
Accuracy	1% F.S. with neutral connected / 2% F.S. without neutral connected
Voltage Load Range	
Accuracy	1% F.S. with load voltage measurement option (VLOAD option) / 2% F.S. without option VLOAD
Current Load Range	
Accuracy	2% F.S. at room temperature of 25°C
Sampling Time	0.25msec
Measurement Of External Current Transformer (400-600A Models Only)	
Input F.S.	5A rms
Input Impedance	16mohm
Accuracy	2% F.S. at room temperature of 25°C
Sampling Time	0.25msec

ACPC Advanced Modular SCR Power Controller *(cont'd.)*

RS485 Serial (PORT 1)	
Connector	Double RJ10
Protocol	Modbus RTU RS485
Baud Rate	Configurable from 1200 Baud to 115000 Baud
Node Address	Pair of rotary-switches
Dip Switch	For insertion of line termination resistance. Isolation 1500V
Fieldbus (PORT 2)	
Modbus RTU	115Kbps
CANopen	10K-1Mbps
Profibus DP	9.6-12Mbps
Ethernet IP/Modbus TCP	10/100Mbps
EtherCAT	10/100Mbps
PROFINET	10/100Mbps
Isolation HV Output	
Rated Isolation Voltage	Input/Output 4000Vac
ACPC 40	
Nominal Current	40Arms @ 40°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 1,400A
I^2T For Blowout	10,000 A^2s
dV/dt Critical	1,000 V/us
ACPC 60	
Nominal Current	60Arms @ 40°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 1,500A
I^2T For Blowout	12,000 A^2s
dV/dt Critical	1,000 V/us
ACPC 100	
Nominal Current	100Arms @ 40°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 1,900A
I^2T For Blowout	18,000 A^2s
dV/dt Critical	1,000 V/us
ACPC 150	
Nominal Current	150Arms @ 40°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 5,000A
I^2T For Blowout	125,000 A^2s
dV/dt Critical	1,000 V/us
ACPC 200	
Nominal Current	200Arms @ 40°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 8,000A
I2T For Blowout	320,000 A^2s
dV/dt Critical	1,000 V/us
ACPC 250	
Nominal Current	250Arms @ 40°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 8,000A
I^2T For Blowout	320,000 A^2s
dV/dt Critical	1,000 V/us

ACPC Advanced Modular SCR Power Controller *(cont'd.)*

ACPC 300	
Nominal current	300 Arms @ 40°C in continuous service.
Non-repetitive overcurrent	t=10ms: 8000 A
I^2t for blowout	320000 A2s
dV/dt critical	1000V/µs
ACPC 400	
Nominal Current	400Arms @ 50°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 15,000A
I^2 T For Blowout	1,125,000 A ^{2}s
dV/dt Critical	1,000 V/us
ACPC 500	
Nominal current	500 Arms @ 50°C n continuous service.
Non-repetitive overcurrent	t=10ms: 15.000 A
I^2t for blowout	1.125.000 A^2s
dV/dt critical	1000V/µs
ACPC 600	
Nominal Current	600Arms @ 50°C in continuous service
Non-repetitive Overcurrent	t = 10ms: 15,000A
I^2T For Blowout	1,125,000 A ^{2}s
dV/dt Critical	1,000 V/us
Thermal Dissipation	
Pdissipation (W)	I_Load_Arms*1.3V (For models with integrated fuse, refer to fuse table for additional dissipation)
LED	
Quantity	8 LED Indicators (All are configurable via software. Default configuration as follows)
Run (Green)	RUN state of the CPU ERROR (Red) error
DI1 (Yellow)	DI1 Digital Input State
DI2 (Yellow)	DI2 Digital Input State
O1 (Yellow)	Out 1 Main Input State
O2 (Yellow)	Out 2 Main Input State
O3 (Yellow)	Out 3 Main Input State
Button (Yellow)	State Key Heater Break
Power Supply (40-300A Models)	
CPU Power Supply	24Vdc +/- 10%, Max 10VA
Cooling Fan Power Supply	24Vdc +/- 10% (For each module), Input @ 24Vdc Max 500mA
Power Supply (400-600A Models)	
ACPC1 Power Supply	24Vdc +/- 10%, Max 38W
ACPC2 Power Supply	24Vdc +/- 10%, Max 66W
ACPC3 Power Supply	24Vdc +/- 10%, Max 94W
Ambient Conditions	
Working Temperature	0-50°C (reference derating curve)
Storage Temperature	-20°C to 85°C
Max Relative Humidity	85+ UR Non-condensing
Max Altitude	2000m above sea level
Installation Requirements	Installation Category 2, Pollution Level 2, Double Isolation
Installation	Panel with screws

ACPC Advanced Modular SCR Power Controller *(cont'd.)*

Ordering Information

To Order — Complete the Model Number using the Matrix provided.

Model ACPC Advanced Modular SCR Power Controller

ACPC1 Single Phase
ACPC2 Three Phase, 2-leg
ACPC3 Three Phase, 3-leg

Code Current @ 104˚F (40˚C) Ambient, continuous service

040	40 Amps	**200**	200 Amps	**500**	500 Amps
060	60 Amps	**250**	250 Amps	**600**	600 Amps
100	100 Amps	**300**	300 Amps		
150	150 Amps	**400**	400 Amps		

Code Nominal Voltage

48 480 Vac [1] (90-530 Vac)
60 600 Vac [1] (90-660 Vac)
69 690 Vac (90-760 Vac)

Blank Code

0 None

Blank Code

0 None

Code Control Options

0 None
1 Current limit
2 Current limit and feedback V,I,P
3 Current limit and feedback V,I,P + V Load input
4 Current limit and feedback V,I,P+ Vload input; CT external inputs [2]

Code Auxiliary Output

0 None
R 4 Relays
D 4 Digital outputs
W 3 Analog outputs 12 bit 0-10V, 4-20mA

Code Diagnostic/Alarm option

0 None
1 Partial or total load failure alarm (HB)

Code Fusing

0 None
1 Internal

Code Communications

00	None	**EP**	Ethernet IP
MR	Modbus RTU/RS485	**ET**	Modbus TCP/IP
PB	Profibus DP	**PS**	Profinet w/ Stack Protocol 3.12.0.5
CN	CANopen	**ES**	EtherCAT w/ Stack Protocol 4.7.0.3

ACPC1-	**040**	**48-**	**0**	**0**	**2**	**R**	**0-**	**0**	**MR**	**Typical Model Number**

[1] Not available on models with rated current >=400A

[2] Not available on models with rated current <=250A

Accessories

Description	PCN
Communication Cable, USB to RS485	309180

CONTROL PRODUCTS