MVPC

Medium Voltage Power Converter System

- **Rated up to 7,200 VAC**
- **Control loads up to 22MW**
- **Full SCR (Zero-Cross) or Hybrid (SCR/Contactor) Power Control**
- **Control loads from 0 – 100% with proprietary Chromalox control algorithm**
- **Patented Automatic Element Dry-Out Functionality**
- **Indoor, Outdoor, and Arc Containment Enclosures Available**

CE

DESCRIPTION

The DirectConnect™ medium voltage power converter system (MVPC) provides a safe, efficient, and cost effective solution for controlling power to DirectConnectTM heating bundles.

Coupled with Chromalox's patented MV heating technology, the MVPC greatly reduces the number of circuits, installation and maintenance costs, as well as the footprint required to heat an application compared to a low voltage (< 1,000V) system.

The DirectConnect™ medium voltage power converter system controls all Chromalox DirectConnect™ MV heaters including bundles, circulation heaters, steam generators, and hot water generators.

BENEFITS

Automatic Element Dry-Out dries elements when excess moisture is detected via variable SCR firing modes and patented logic; drastically reducing process downtime and maintenance costs.

In-house Design and Build from the only third party certified manufacturer of medium voltage converter systems and metal-sheathed heaters. The MVPC has been independently tested and approved by the foremost medium voltage test lab in the world. All-In-One Control provides power and heating system control in one system. One system reduces installation cost and system complexity while ensuring power and heating control are in sync.

Reduced Footprint compared to a low voltage system, the MVPC controls the same heat load in a smaller package. Utilizing a reduced number of circuits and smaller cables results in instant installation cost savings.

Proven Industry Leading Voltage Capabilities for resistance heating applications. The use of higher voltages results in an increase in system power efficiency through the reduction of I^2R losses leading to operational cost savings.

Low Noise Power Transmission via overvoltage and overcurrent protection ensure reliable power transmission from a system with a Total Harmonic Distortion of less than 5%.

MVPC

Medium Voltage Power Converter System *(Cont.)*

SPECIFICATIONS

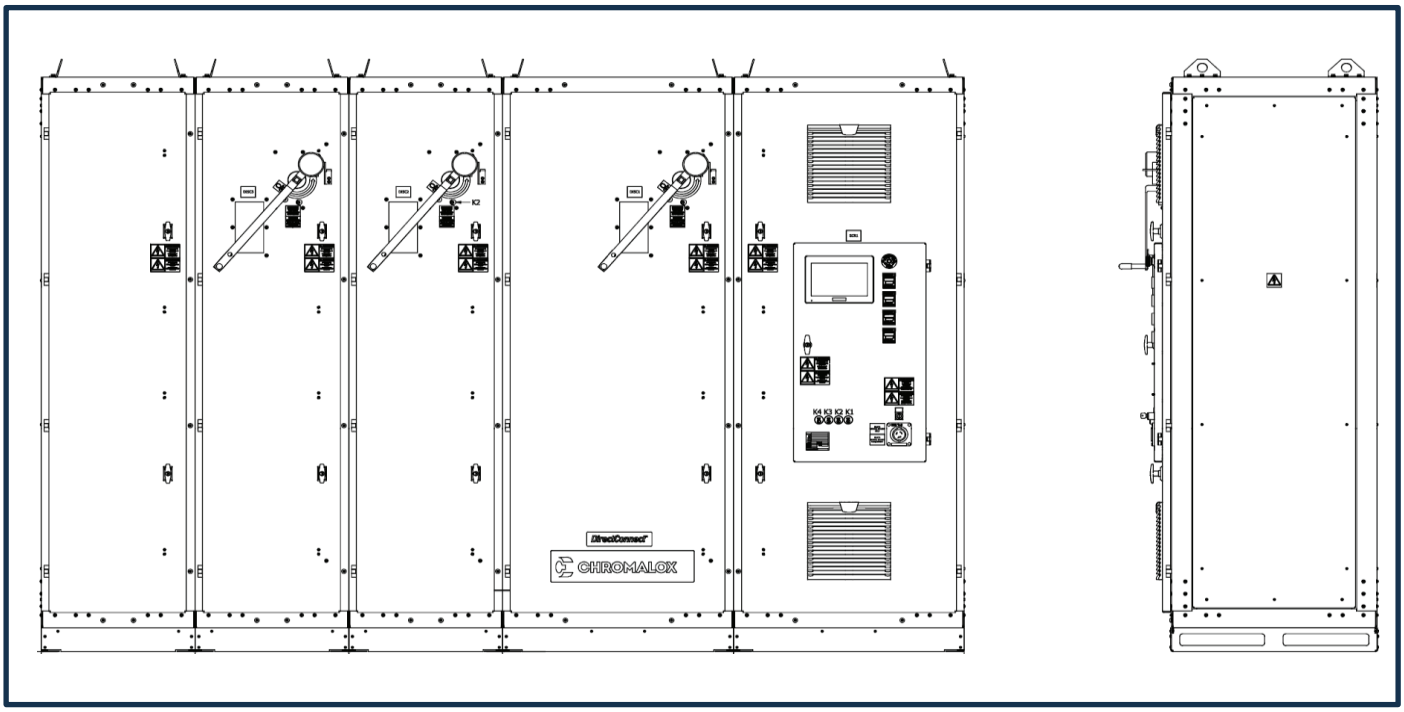
Electrical	Standard Feature	Optional
Nominal (Rated) Voltage, 50/60Hz	4.16kV (4.76kV) 6.60kV (7.20kV)	1.00 - 6.90kV[1] (up to 7.20kV)
Nominal (Rated) Capacity	960A (1,000A)	1,920A (2,000A)
Short Circuit Current Rating (SCCR)	50.0kA	
Basic Impulse Level (BIL)	40.0kV	
Power Control Options	Hybrid (1 SCR + Contactor(s))	Full SCR, Zoned, Multi-SCR Hybrid
Control Circuit Power	120V (Externally derived)	120V (Internally Derived), 230/240V (Externally Derived)
Main Bus	Tin plated copper with direct on line supply power termination	
Cable Entry/Exit Options	Bottom	Top (NEMA 2 / IP42, NEMA 1 / IP20D only)
Safety/Protection	Kirk Key Interlock per circuit, Disconnector per circuit, Surge Arrestors, Type E Short Circuit Fuses, Isolated Low Voltage Control compartment, Anti-Condensate Heaters	Arc Flash Optic Sensors Ultra Fast Earthing Switch Thermographic (IR) Viewing Windows
Ingress Rating	Non-arc resistant, indoor: NEMA 2 / IP42 Arc resistant, indoor: NEMA 1 / IP20D	Non-arc resistant, outdoor: NEMA 3R / IP54, NEMA 3RX / IP54 Non-arc resistant, in/outdoor: NEMA 12 / IP54 Z-Purge, suitable for Cl. 1, Div. 2 Gr. A – D / II 3G Ex ec ic [pzc] IIC T6 Gc (NEMA 3R / IP54, NEMA 3RX / IP54 only)
Enclosure Finish	Powder Coated Carbon Steel, RAL 7035	316SS, 2B finish (NEMA 3RX / IP54 only)
Central Control Unit	ProfaceTM HMI with Chromalox PCBs	Remote HMI
Discrete Input/Output	Emergency/Remote Shutdown Interlock Demand Signal Retransmit (4-20mA) PCB Common Alarms (Dry)	Integration Panel (IP) MVSGI only via IP: Pump ON/OFF, Blowdown Control Power (120V)
Process Input Options	Temperature (Sensor) Pressure (Transducer) (MVSGI1 only via IP) Heat Demand Signal (4 - 20mA, 0 – 100%)	MVSGI[2] only via IP: Primary Low Water Cutoff, Auxiliary Low Water Cutoff
Monitoring	Ground Fault / Dry-out, Current, SCR Voltage/Temperature/Short/Imbalance, Over Temperature (up to 8 sensors), Supply Voltage[3], Short Circuit[3], Fan Failure, Blown Fuse	
Communications	Modbus RTU	ModBus TCP, BACnet
Ambient Temperature	32°F (0 °C) min., 104 °F (40 °C) max.	-4 °F / -20 °C min, -40 °F / °C min.
Certifications	IEC/EN 62477-2, 2011/65/EU (RoHS 3), 2014/30/EU (EMC)	CSA-SPE-1000

[1]Supply voltage tolerance cannot exceed 7.2kV *[2]Visit our website for more information on the MVSGI Medium Voltage Steam Generator, www.chromalox.com*
[3] Patent Pending

MVPC

Medium Voltage Power Converter System *(Cont.)*

NEMA 1 (IP20) / NEMA 2 (IP42) ENCLOSURE DIMENSIONS (3 CIRCUIT SYSTEM SHOWN)



STANDARD SIZE SPECIFICATIONS

4,160V, 50/60Hz, Hybrid Power Control

Circuits	Max. Power (kW)	Approx. Dimensions & Weights (in/mm, lbs/kg)*			
		Height	Width	Depth	Weight
1	2,300	94/2400	96/2400	33/829	4,265/1,935
2	4,600	94/2400	120/3000	33/829	5,290/2,400
3	6,900	94/2400	144/3600	33/829	6,315/2,865

6,600V, 50/60Hz, Hybrid Power Control

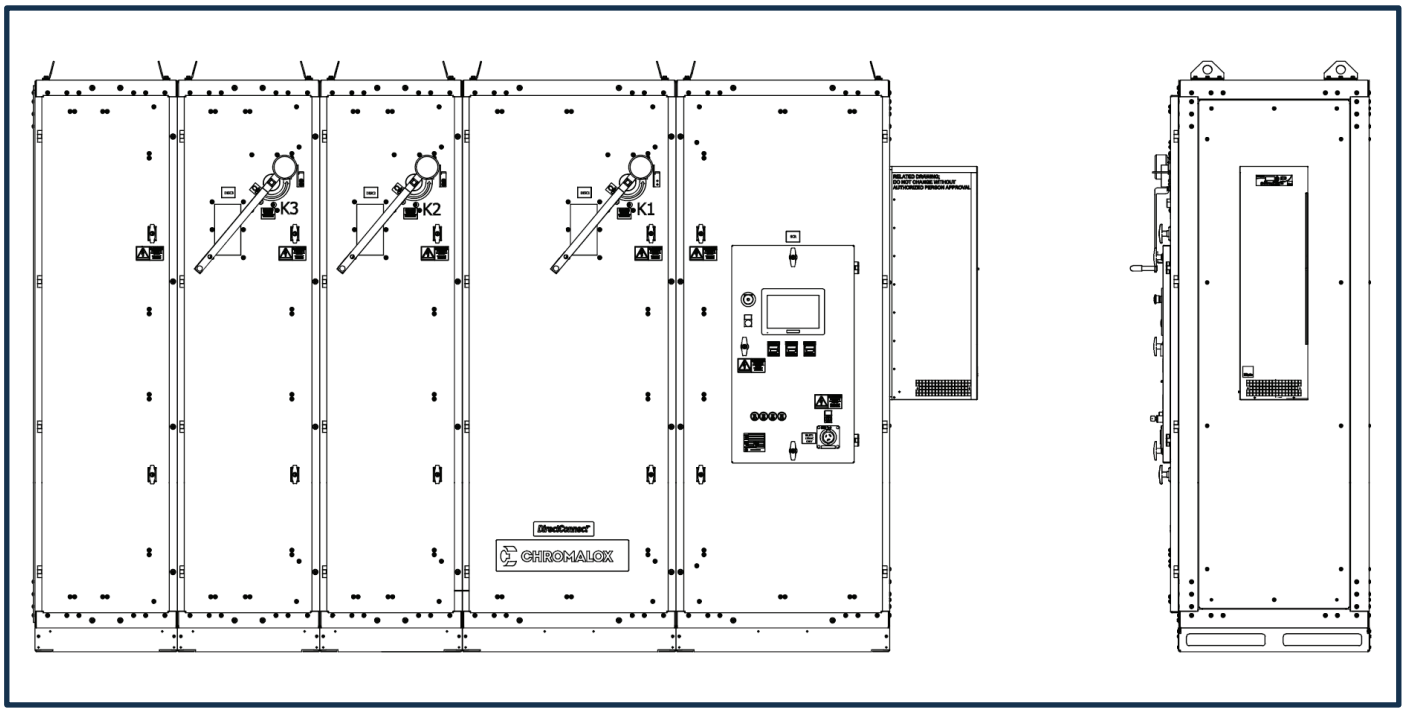
Circuits	Max. Power (kW)	Approx. Dimensions & Weights (in/mm, lbs/kg)*			
		Height	Width	Depth	Weight
1	3,650	94/2400	96/2400	33/829	4,265/1,935
2	7,300	94/2400	120/3000	33/829	5,290/2,400
3	10,950	94/2400	144/3600	33/829	6,315/2,865

** 20" (508mm) arc shroud not shown or included in Dimensions & Weights, NEMA 1 (IP20) enclosure only*

MVPC

Medium Voltage Power Converter System *(Cont.)*

NEMA 3R (IP54) / NEMA 3RX (IP54) ENCLOSURE DIMENSIONS (3 CIRCUIT SYSTEM SHOWN)



STANDARD SIZE SPECIFICATIONS

4,160V, 50/60Hz, Hybrid Power Control

Circuits	Max. Power (kW)	Approx. Dimensions & Weights (in/mm, lbs/kg)			
		Height	Width	Depth	Weight
1	2,300	94/2400	111/2,270	33/829	3,630/1,704
2	4,600	94/2400	135/3,370	33/829	4,480/2,090
3	6,900	94/2400	159/3,970	33/829	5,330/2,476

6,600V, 50/60Hz, Hybrid Power Control

Circuits	Max. Power (kW)	Approx. Dimensions & Weights (in/mm, lbs/kg)			
		Height	Width	Depth	Weight
1	3,650	94/2400	111/2,770	33/829	3,630/1,704
2	7,300	94/2400	153/3,370	33/829	4,480/2,090
3	10,950	94/2400	159/3,970	33/829	5,330/2,476