

# Power Systems & Controls

## Series SC -- Synchronous Condenser



A Series SC is an unloaded or lightly loaded synchronous machine that will deliver the required reactive power dynamically. The SC is connected to the power line and is intentionally run in an overexcited condition. The level of excitation is dependent on the amount of power factor correction desired and

the amount of power factor sensed by the condenser controls. The condenser will adjust the excitation level automatically to maintain the power factor at the correct setting. Once the Series SC is installed, it continuously monitors the power factor and produces the right amount of VAR needed to correct any power factor without switching transients and is not troubled by harmonic currents produced by solid state motor drives.

The Series SC also helps overall power quality by reducing voltage transients and by reducing the problems associated with harmonic distortion found in many manufacturing process. The Series SC is available from 100 kVAR to 10,000 kVAR modules, from 480 volts up to 15 KV.

Applying a synchronous condenser for power factor correction provides many advantages with no risks. Correcting power factor with a condenser is much smoother and will not adversely affect a system loaded with current harmonics. The condenser is a low impedance source and appears inductive to loads. In addition the Series SC is easy to maintain (a simple annual lubrication) and adapts easily to a plant's changing loads. (Dynamic Correction) The SC has many user friendly features such as the automatic restart after power loss. The SC also has a state-of-the-art intergrated touch screen display and control interface. The controls are designed to be friendly and easily understood so that the user can control the SC from this panel. The touch screen will display voltage, current, power factor, and power information as a minimum.

### Standard Equipment Features

- NEMA-1 control cabinets, steel construction
- NEMA connection boxes on motors
- Emergency Power Off
- Vibration mounts
- Anti-friction bearings throughout
- Rigid steel base, welded construction
- Textured finish
- Over-voltage & under-voltage detectors
- Reduced current pony motor starting
- Under-frequency detector
- Winding over-temperature detector
- Bearing over-temperature protection
- Automatic restart
- Hour meter
- Precision, solid-state voltage and power factor regulators
- Electrically operated main circuit breaker
- Switchboard grade VAR meter and power factor meter
- Start and control logic with internal fault monitors
- Touch Screen Interface
- Industrial design

### Optional Features

- Remote monitor (Status & Alarm)
- Sound enclosure
- Special voltages
- Remote communications
- Parallel modules
- Remote touch screen (control)
- Extended metering packages
- Remote emergency power off
- Building interface
- Fiber optic controls

# System Specifications

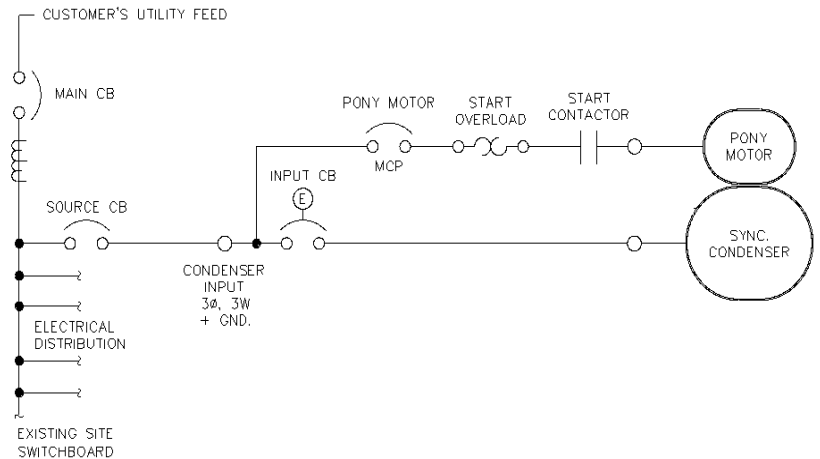
\*Note: System performance shown is typical and is dependent upon M-G sizing, options desired, and loading of the system.

INPUT		OUTPUT	
Nominal Voltage Available		Nominal Voltage Available	
➤ @ 60 Hz	208, 240, 480, 600	➤ Adjustment	± 20% Depending on capacity
➤ @ 50 Hz	380, 415	➤ Recovery Time	0.5 within 0.5 Seconds
➤ Phase	3 Phase 4 Wire + Ground	➤ Steady State	+/-0.5% Δ 90° F
➤ Magnitude Tolerance		Overload Capacity	
➤ Continuous	+10%, -20%	➤ 100% Rating	Continuous
➤ Transient	1500v for 10 ms	➤ 110%	2 Hours
Power Factor		➤ 125 %	10 Minutes
➤ Starting Inrush	< 1.5 X FLA	➤ 150%	1 Minutes
		➤ Power Factor	0.8

SERIES SC WITH UNIT MOUNTED CONTROL CONSOLE				
RATING KVAR	DIMENSIONS (IN)			WEIGHT (LB)
200	58"	44"	75"	3,300
250	58"	44"	75"	3,600
350	64"	44"	75"	4,100
450	65.5"	48"	75"	5,400
550	72"	48"	75"	6,000
650	72"	48"	75"	6,250
750	79"	48"	75"	6,800
850	82"	40"	75"	8,000
1000	89"	40"	61"	9,000
1100	95.5"	40"	71"	10,000
1250	95.5"	40"	71"	10,000
1400	95.5"	40"	73"	10,700
1450	95.5"	40"	73"	10,700
1800	102"	40"	73"	11,800
2000	102"	40"	73"	11,800

Consult Factory for: Medium Voltage, Integrated PM Windings, or Non-standard size

ENVIRONMENT	
➤ Optional Temperature	32° -104° F (0° -40° C)
➤ Altitude	0 to 3300 meters (0 to 5000 FT)
➤ Humidity	0 to 95% non-condensing
➤ Noise Level	75 to 90dBa @ 1.5 meters (5 FT)



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**& CONTROLS**  
 THE POWER IS ON!