REMO-HSE	CMR Series 120/200/400/750/1500W with PFC Input	Datasheet
	Regulated High Voltage Cabinets	

Description:

- Regulated high voltage cabinet designed for OEM applications
- Different maximum voltage ratings from 5kV to 120 kV with positive or negative polarity
- The maximum output power is 120W, 200W, 400W, 750W or 1500W depending on version
- The output voltage is adjustable between 0% and 100% of the rated output

Features:

- 230 V AC or wide range input with PFC
- Soft start
- Automatic crossover from constant-voltage to constant-current regulation and vice versa
- Spark sensing and monitoring
- High voltage output 100 % short-circuit proof to ground
- Signal lights for status messages and emergency stop switch
- Adjustable current-voltage characteristic
- Type of protection IP53
- CMR-P type: Internal potentiometers to adjust voltage and current. Three high voltage values can permanently be preset and selected via a sliding switch
- CMR-S type: PLC control and monitoring via analogue interface. Signals are scaled 0 to 10V equals 0 to 100% of full scale
- CMR-SP type: Potentiometer adjustment and PLC control/monitoring selectable via an internal sliding switch

Options:

- Under-voltage monitoring
- Second high voltage output:
  E.g. for use in electrostatic filters designs are available with a second voltage output for the collector. The unit automatically controls the high voltage at flashover in the filter.

Typical Applications:

- Electrostatic Filters
- Electrostatic charging and discharging
- Etc.

Technical Specifications

Input and Output

Input:

200W / 750W / 1500W type: 230 VAC (±10%) with PFC
120W / 400W type: 115V AC to 230 VAC (±10%) with PFC
50 to 60 Hz

Input current:

120W	200W	400W	750W	1500W
1,5A	2,0A	5,5A	5,0A	10A

Output:

Continuous adjustment from 0% to 100% of the rated voltage or current by potentiometer and/or external 0 to 10V signals. Automatic crossover from constant-voltage to constant-current regulation.

Accuracy better than 2% of the rated voltage.

Available with either positive or negative polarity with respect to chassis ground.

Efficiency:

At 230 VAC and rated values typically:

120W	200W	400W	750W	1500W
87%	87%	88%	91%	91%

At 115 VAC and rated values typically:

120W	400W
85%	85%

The power factor is better than 98% at full load.

Environmental Data

Operating Temperature Range:	0 to +40ºC
Storage Temperature Range:	-25 to +70ºC
Humidity:	80% maximum relative humidity up to +31ºC, reducing linearly to 50% at +40ºC Non condensing (ref. EN61010-1)
Altitude:	0 to 2000m

Special Features	
Soft Start:	At startup, recovery from sparks or short circuit the cabinets provide controlled ramp up to prevent dangerous voltage overshooting. At full load the output voltage will rise within approximately 150ms to the rated voltage (other ramp-up times available on request).
Pre-set output values (CMR-P and CMR-SP type)	The high voltage output (U1) can permanently be pre-set by three independent potentiometers and are selectable via a sliding switch.
Adjustable Output Characteristic:	The current-voltage characteristic can be adjusted via potentiometer such that the output voltage decreases with increasing current.
Spark Sensing:	Internal circuitry senses sparks caused by external discharges. In case of a spark the module will turn off for approximately one second and will then ramp up automatically.
Spark Monitoring:	In case of eight (other possible factory settings 10, 20 or 40) sparks per minute a relay is set.

Status Messages	
High Voltage Cabinet “On”:	The ON/OFF switch lights if the cabinet is turned on and signals operational conditions
Signal Light “Ready”:	The actual output voltage is at least as high as 90% of the set value (the internal green/yellow LED lights green)
Signal Light “Load”:	Lights, if the actual output current amounts to minimum 90% of the set current for approximately five minutes If the output current decreases the signal light turns off after about two minutes. Lights, if the over-current shutdown (sparks!) operates several times per minute The factory setting is eight sparks per minute, further factory settings (10, 20 or 40) available. To reset the signal light of the CMR-S and CMR-SP cabinets the high voltage release ON-OFF must be operated, the cabinet must be disconnected from mains supply in case of the CMR-P type.
Red LED (only internal):	Signals that the allowed operating temperature was exceeded

Protection

- Over-voltage and over-current limitation
- Over-voltage, over-current and over-temperature shutdown
- High voltage output 100 % short-circuit-proof to ground
- In case of a spark the cabinet will turn off for approximately one second and will then ramp up automatically. In case of eight (other possible factory settings 10, 20 or 40) sparks per minute a relay is set.

Additional Information

Recovery Time:	Approximately 15 seconds following a disconnection of mains supply
Power Factor:	Better than 98% at full load
Interface Design:	11core control cable

Mechanical Data

Housing:	Cabinet, sheet steel powder coated
Dimensions(approx):	Cabinet (without suspension device and controls) 120W / 200W bis 60kV: 300 mm wide, 300 mm high, 210 mm deep 120W / 200W / 400W / 750W: 300 mm wide, 400 mm high, 210 mm deep 1500W type: 500 mm wide, 500 mm high, 210 mm deep
Weight:	Approx. 7 to 28kg depending on output power and voltage
Classification:	IP 53
Ventilation:	Internal forced air circulation with van, from 750W active cooling with fan in the housing

CMR-P Type: Potentiometer Adjustments

- Continuous adjustment of voltage and current via potentiometer
- The high voltage output (U1) can permanently be pre-set by three independent potentiometers and are selectable via a sliding switch.
- In case of over-voltage, over-current or over-temperature the module shuts down and must be disconnected from mains supply before resetting.

CMR-S Type: PLC Controls and Monitors via Analogue Interface

- High voltage On/Off switch via analogue interface

  High Voltage On / Off: 10 to 30 V active high

- Continuous adjustment of voltage and current via analogue interface

  Voltage Demand: 0 to 10 V DC demands 0 to rated output voltage

  Current Demand: 0 to 10 VDC demands 0 to rated output current

- Continuous monitoring of voltage and current via analogue interface (output current: max. 1mA)

  Actual Voltage: 0 to 10VDC for 0 to rated voltage

  Actual Current: 0 to 10 VDC for 0 to rated current

  Characteristic Adjustment: 0 to 10 VDC for 0 to rated voltage; displays the modified nominal voltage due to the adjustment of the current- voltage characteristic via the corresponding potentiometer

- Status Messages: Ready (internal green/yellow LED), Load (internal yellow LED) and Temp. (internal red LED)

  Ready: 0 VDC, if the actual output voltage is at least as high as 90% of the nominal value, or open collector else

  Load: Open collector, if the actual output current amounts to minimum 90% of the nominal current for approximately five minutes and/or if a spark frequency of eight (further factory settings 10/20/40) sparks per minute was detected, or 0 VDC else

  Temp.: Approx. 10 VDC, if the allowed operating temperature was exceeded, or 0 VDC else.

  Sparks: 0 VDC, if the output voltage has broken down due to a spark; ca. 10 VDC else.

- If the module shuts down due to over-voltage or over-current the high voltage must be switched off before resetting (the module must not be disconnected from mains supply).

CMR-SP Type: Potentiometers and Analogue Interface

- Control and monitor functions of the CMR-P and CMR-S type (see above) combined into one unit
- With an internal sliding switch one can switch over from potentiometer adjustments to PLC control/monitoring and vice versa.
- The actual nominal values set by potentiometer are output via the analogue interface.
- On/Off control via the analogue interface, only.

Options

- Some cabinets are also available with a second high voltage output (fixed ratio as compared to first high voltage output e.g. 50% or 75%)
- Under-voltage monitoring of the high voltage output: If the output voltage drops below 20% (other factory setting possible) of the maximum output voltage in constant-current operation (overload) the module will turn off for approximately one second and will then ramp up automatically.
- In case of eight (other possible factory settings 10, 20 or 40) sparks per minute not only a relay is set but also the cabinet turns off.
- Interface Design as 15-pin SubD socket (type DA-15F)

Type Code: CMR Series: