



# RT7-240VDC/6kW Specification

The RT7-240VDC/6kW is a 3 phase, active power factor corrected, switched mode rectifier (SMR) module designed to provide up to 6kW of output power (30A limit) into a 240VDC nominal system. This rectifier is primarily used in conjunction with a battery to provide an uninterruptible or standby DC power system. Up to 20 rectifiers can fit in a rack and up to 225 rectifiers can be configured as a system using one control and supervisory unit. The system can be monitored and controlled remotely using WinCSU software.

Illustrated is a single rectifier module.



Operating characteristics, RT7-240VDC/6KW at 25°C ambient, 400VAC, 50Hz unless otherwise stated:

## Input

### Voltage:

Three phase, three wire and Earth  
400 +32/-20% VAC (320VAC - 530VAC)  
Phase to phase delta connection;  
Tolerable phase imbalance 10%  
(Measured L-L as defined by IEEE/IEC)  
Voltage withstand 575VAC line-line indefinitely;

### Current:

13A RMS max line current at 320VAC;  
10A RMS line current at 400 VAC;  
Sinusoidal waveform;

### Frequency:

45 - 66Hz;

### Phase Rotation:

Insensitive to Phase Rotation

### Inrush Current:

< 16A peak at nominal mains voltage;

### Soft Start:

Output current ramp-up time 8 seconds to 25A;

### Protection:

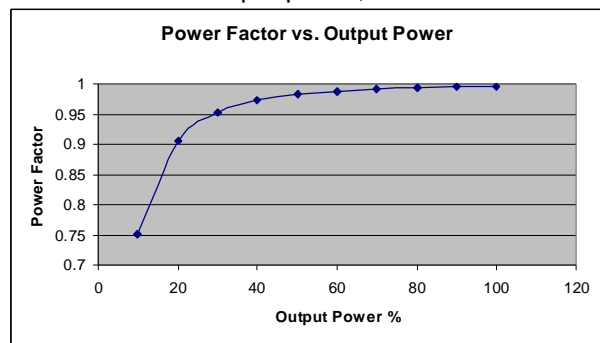
HRC fuses at input of SMR; power circuit is turned off if the AC voltage exceeds ~535VAC or falls to less than ~315VAC; unit re-activates when AC voltage is within approximately 340 – 510 VAC; input inrush limiting circuit prevents high surge currents when connecting to a live AC bus;

### Voltage Withstand Test:

1500VAC input to chassis for 1 minute;  
(2200VDC 100% testing on production units);

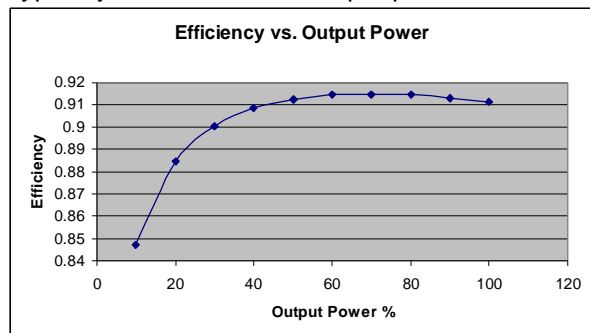
### Power Factor:

> 0.98 for >50% output power;  
> 0.99 for 100% output power;



### Efficiency:

Typically >91% at > 40% output power;



### Harmonic Distortion:

Current THD < 5% typically at full output power when operated with mains voltage THD < 2%;  
(±1% phase imbalance)





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## Output

### Voltage:

Float: 185 – 340V  
Equalise: 205 – 365V

### Current Limit:

Range 3 - 30A

### Power Limit:

Current limit is automatically reduced in inverse proportion to output voltage above 240VDC to limit output power to 6 kW (min);

Max. current: 30A at 200V  
25A at 240V  
20A at 300V  
17A at 350V

### Conversion Frequency:

>20kHz;

### Static Regulation:

Line: better than  $\pm 0.05\%$ ;

Load: terminal voltage drops by  $2.4V \pm 0.2V$  from zero to 25A load (for passive current sharing) for stand-alone units, or regulates to better than  $\pm 0.05\%$  for MiniCSU controlled units;

### Dynamic Regulation:

$\pm 5\%$  for 10% to 90% to 10% step load change;  
 $\pm 1\%$  of final value within 100ms of step change;  
 $\pm 1\%$  for a 25% step change in AC input voltage;

### Noise:

< 500mV RMS (100Hz – 10kHz);  
< 50mV RMS (10kHz – 100MHz);  
< 500mV peak to peak (10kHz – 100MHz);

### Load Sharing:

Better than  $\pm 5\%$  of full scale with active current sharing from MiniCSU;

### Protection:

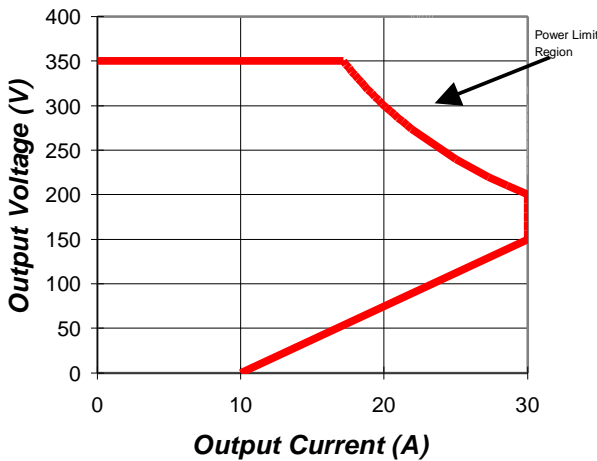
Fuse at output of SMR;

Soft start circuit prevents surges when connection is made to a live DC bus;

*Overvoltage* - only faulty unit shuts down;

*Overcurrent* - can sustain short circuit at output terminals indefinitely. Output current starts folding back when output voltage drops below 150V to less than 10A at zero terminal voltage;

*Over-temperature* - gradual reduction of power limit if heatsink temperature exceeds pre-set limit;



\*30A current limit automatically reduces by 0.3A/°C for heatsink temperatures above 60°C.

### Voltage Withstand Test:

1000VAC output to chassis for 1 minute;  
(1500VDC 100% testing on production units);

## Remote Controls

### Equalise Mode:

Equalise mode is initiated by a signal from the MiniCSU;

### Rectifier Inhibit:

Rectifiers can be inhibited by a signal from a remote WinCSU terminal, transmitted via the MiniCSU;

### External Digital Voltage Control (EDVC):

The MiniCSU uses the optically coupled communications lines to digitally control rectifier Float and Equalise voltages over a limited voltage range in order to adjust battery voltage for temperature and voltage drop in DC bus, limit the maximum battery recharging current and to achieve active current sharing;





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## RT7-240VDC/6kW dimensions:

