

PLW Series

6–250 kW

Water-Cooled Programmable DC Electronic Load

60–1000 Vdc

- Broadest Model Selection: 6kW, 9kW, 12kW, 18kW, 24kW, 36kW, Additional standard models above 36kW, up to 250kW, are available.
- Standard 60V, 120V, 400V, 600V, 800V and 1000V Voltage Ratings
- PLW Models Offer Ultra-compact Footprint and Boasts one of the industry's highest power densities, 18kW in 2U.
- Anti-condensation: Intelligent Fully-integrated Temperature Control Circuit and Solenoid Valve
- Standard LabWindows and LabVIEW Drivers and SCPI Command Set
- RoHS Compliant



10–5000 Adc



95-240 VAC

ETHERNET



RS232

Traditional DC Electronic Load Solutions are bulky and large in size. Most are offered with standard voltage, current and power ratings. In the ATE world, rack space is a highly coveted asset and application demands are constantly diversifying with new technology development.

AMETEK Programmable Power's Sorensen Brand PLW Series "Water-cooled" DC Electronic Loads are capable of being custom-tailored to meet your specific application requirements. The PLW Series also offers a unique condensation protection design, the highest power density and current rating, as well as the widest selection of high-voltage models on the market.

Key Features

Closed-case Calibration

With the eLoad line, there's no longer a need to send your electronic load back to the factory for calibration or remove dozens of screws to reach a potentiometer. Simply follow the calibration routine from the front panel and you should be back up and running in a very short period of time (some electronic test equipment needed). This will virtually eliminate downtime and eradicate the annual cost associated with shipping your eLoad back to the factory for calibration.

Individual FET Protection

To ensure its reliability, the PLW Series design includes individual FET protection. A programmable electronic load may contain many FETs in parallel, which can create a cascading failure if one of them was to short out. The PLW design isolates failures so other components will not be affected or stressed, increasing the system's level of protection against catastrophic failure. With individual FET protection, the MTTR is reduced and the electronic load quickly returns to full operation.

Ultra-low Voltage Operation

The PLW design allows the programmable electronic load to operate at voltage levels approaching 0.1V. They will typically dissipate full rated current below 1% of their maximum rated voltage. For example, a 60V unit designed to dissipate 1500A will allow the user to operate at 0.6V and still dissipate the full amount.

PLW Series : Product Selector

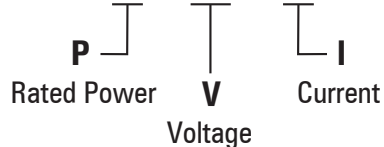
| PLW Selector Guide | | | | | | | | | | | | | | | | | | |
|--------------------|-------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|-------|-------|-------|
| Model | | | 15A | 25A | 30A | 40A | 50A | 75A | 100A | 150A | 200A | 300A | 400A | 600A | 800A | 1000A | 1200A | 1500A |
| | VOLT | AMP | | | | | | | | | | | | | | | | |
| PLW6K | 60V | | | | | | | | | | | | | | | | | |
| | 120V | | | | | | | | | | | | | | | | | |
| | 400V | | | | | | | | | | | | | | | | | |
| | 600V | | | | | | | | | | | | | | | | | |
| | 800V | | | | | | | | | | | | | | | | | |
| | 1000V | | | | | | | | | | | | | | | | | |
| PLW9K | 60V | | | | | | | | | | | | | | | | | |
| | 120V | | | | | | | | | | | | | | | | | |
| | 400V | | | | | | | | | | | | | | | | | |
| | 600V | | | | | | | | | | | | | | | | | |
| | 800V | | | | | | | | | | | | | | | | | |
| | 1000V | | | | | | | | | | | | | | | | | |
| PLW12K | 60V | | | | | | | | | | | | | | | | | |
| | 120V | | | | | | | | | | | | | | | | | |
| | 400V | | | | | | | | | | | | | | | | | |
| | 600V | | | | | | | | | | | | | | | | | |
| | 800V | | | | | | | | | | | | | | | | | |
| | 1000V | | | | | | | | | | | | | | | | | |
| PLW18K | 60V | | | | | | | | | | | | | | | | | |
| | 120V | | | | | | | | | | | | | | | | | |
| | 400V | | | | | | | | | | | | | | | | | |
| | 600V | | | | | | | | | | | | | | | | | |
| | 800V | | | | | | | | | | | | | | | | | |
| | 1000V | | | | | | | | | | | | | | | | | |
| PLW24K | 60V | | | | | | | | | | | | | | | | | |
| | 120V | | | | | | | | | | | | | | | | | |
| | 400V | | | | | | | | | | | | | | | | | |
| | 600V | | | | | | | | | | | | | | | | | |
| | 800V | | | | | | | | | | | | | | | | | |
| | 1000V | | | | | | | | | | | | | | | | | |
| PLW36K | 60V | | | | | | | | | | | | | | | | | |
| | 120V | | | | | | | | | | | | | | | | | |
| | 400V | | | | | | | | | | | | | | | | | |
| | 600V | | | | | | | | | | | | | | | | | |
| | 800V | | | | | | | | | | | | | | | | | |
| | 1000V | | | | | | | | | | | | | | | | | |

PLW Series : Product Specifications

| General | | | | | | | |
|-----------------|-----------|---------------|----------------|-----------------------|------------------------|--------------|----------------------|
| Models | Power (W) | Voltage (Vdc) | Current (A dc) | CR Low (min) Ω | CR High (max) Ω | VMIN at IMAX | Size (Height, Depth) |
| PLW6K-60-1000 | 6000 | 60 | 1000 | 0.0150 | 60 | 0.9 | 2U, 27.5"D |
| PLW6K-120-600 | 6000 | 120 | 600 | 0.0125 | 200 | 1.5 | 2U, 27.5"D |
| PLW6K-400-300 | 6000 | 400 | 300 | 0.0090 | 1333.3 | 3.6 | 2U, 27.5"D |
| PLW6K-600-200 | 6000 | 600 | 200 | 0.0200 | 3000 | 12 | 2U, 27.5"D |
| PLW6K-800-25 | 6000 | 800 | 25 | 0.0075 | 32000 | 6 | 2U, 27.5"D |
| PLW6K-1000-25 | 6000 | 1000 | 25 | 0.0060 | 40000 | 6 | 2U, 27.5"D |
| PLW9K-60-1500 | 9000 | 60 | 1500 | 0.0150 | 40 | 0.9 | 2U, 27.5"D |
| PLW9K-120-1000 | 9000 | 120 | 1000 | 0.0125 | 120 | 1.5 | 2U, 27.5"D |
| PLW9K-400-400 | 9000 | 400 | 400 | 0.0090 | 1000 | 3.6 | 2U, 27.5"D |
| PLW9K-600-300 | 9000 | 600 | 300 | 0.0200 | 2000 | 12 | 2U, 27.5"D |
| PLW9K-800-40 | 9000 | 800 | 40 | 0.0075 | 20000 | 6 | 2U, 27.5"D |
| PLW9K-1000-40 | 9000 | 1000 | 40 | 0.0060 | 25000 | 6 | 2U, 27.5"D |
| PLW12K-60-1500 | 12000 | 60 | 1500 | 0.0125 | 40 | 0.75 | 2U, 27.5"D |
| PLW12K-120-1200 | 12000 | 120 | 1200 | 0.0130 | 100 | 1.56 | 2U, 27.5"D |
| PLW12K-400-600 | 12000 | 400 | 600 | 0.0090 | 666.6 | 3.6 | 2U, 27.5"D |
| PLW12K-600-400 | 12000 | 600 | 400 | 0.0200 | 1500 | 12 | 2U, 27.5"D |
| PLW12K-800-50 | 12000 | 800 | 50 | 0.0075 | 16000 | 6 | 2U, 27.5"D |
| PLW12K-1000-50 | 12000 | 1000 | 50 | 0.0060 | 20000 | 6 | 2U, 27.5"D |
| PLW18K-60-1500 | 18000 | 60 | 1500 | 0.0100 | 40 | 0.6 | 2U, 27.5"D |
| PLW18K-120-1500 | 18000 | 120 | 1500 | 0.0125 | 80 | 1.5 | 2U, 27.5"D |
| PLW18K-400-800 | 18000 | 400 | 800 | 0.0090 | 500 | 3.6 | 2U, 27.5"D |
| PLW18K-600-600 | 18000 | 600 | 600 | 0.0200 | 1000 | 12 | 2U, 27.5"D |
| PLW18K-800-75 | 18000 | 800 | 75 | 0.0075 | 10666.6 | 6 | 2U, 27.5"D |
| PLW18K-1000-75 | 18000 | 1000 | 75 | 0.0060 | 13333.3 | 6 | 2U, 27.5"D |
| PLW24K-60-1500 | 24000 | 60 | 1500 | 0.0075 | 40 | 0.45 | 4U, 27.5"D |
| PLW24K-120-1500 | 24000 | 120 | 1500 | 0.0100 | 80 | 1.2 | 4U, 27.5"D |
| PLW24K-400-1200 | 24000 | 400 | 1200 | 0.0090 | 333.3 | 3.6 | 4U, 27.5"D |
| PLW24K-600-800 | 24000 | 600 | 800 | 0.0200 | 750 | 12 | 4U, 27.5"D |
| PLW24K-800-100 | 24000 | 800 | 100 | 0.0075 | 8000 | 6 | 4U, 27.5"D |
| PLW24K-1000-100 | 24000 | 1000 | 100 | 0.0060 | 10000 | 6 | 4U, 27.5"D |
| PLW36K-60-1500 | 36000 | 60 | 1500 | 0.0075 | 40 | 0.45 | 4U, 27.5"D |
| PLW36K-120-1500 | 36000 | 120 | 1500 | 0.0075 | 80 | 0.9 | 4U, 27.5"D |
| PLW36K-400-1500 | 36000 | 400 | 1500 | 0.0083 | 266.6 | 3.3 | 4U, 27.5"D |
| PLW36K-600-1000 | 36000 | 600 | 1000 | 0.0167 | 600 | 10 | 4U, 27.5"D |
| PLW36K-800-150 | 36000 | 800 | 150 | 0.0075 | 5333.3 | 6 | 4U, 27.5"D |
| PLW36K-1000-150 | 36000 | 1000 | 150 | 0.0060 | 6666.6 | 6 | 4U, 27.5"D |

Note: Higher power available. Please contact the factory.

PLW XX - YY - ZZ - Option



"E" = Ethernet / USB
 "I" = Isolated Analog Programming
 "UL" = Ultra-Low Range

PLW Series : Product Specifications

| Constant Resistance Mode | | | | | | |
|--------------------------|-----------|---------|-----------|--------|-----------|-------|
| Models | CRH Range | | CRM Range | | CRL Range | |
| | Rmin | Rmax | Rmin | Rmax | Rmin | Rmax |
| PLW6K-60-1000 | 0.6 | 60 | 0.06 | 15 | 0.0009 | 0.06 |
| PLW6K-120-600 | 2.0 | 200 | 0.20 | 50 | 0.0025 | 0.20 |
| PLW6K-400-300 | 13.3 | 1333.3 | 1.33 | 333.3 | 0.0120 | 1.33 |
| PLW6K-600-200 | 30.0 | 3000 | 3.00 | 750 | 0.0600 | 3.00 |
| PLW6K-800-25 | 320.0 | 32000 | 32.00 | 8000 | 0.2400 | 32.00 |
| PLW6K-1000-25 | 400.0 | 40000 | 40.00 | 10000 | 0.2400 | 40.00 |
| PLW9K-60-1500 | 0.4 | 40 | 0.04 | 10 | 0.0006 | 0.04 |
| PLW9K-120-1000 | 1.2 | 120 | 0.12 | 30 | 0.0015 | 0.12 |
| PLW9K-400-400 | 10.0 | 1000 | 1.00 | 250 | 0.0090 | 1.00 |
| PLW9K-600-300 | 20.0 | 2000 | 2.00 | 500 | 0.0400 | 2.00 |
| PLW9K-800-40 | 200.0 | 20000 | 20.00 | 5000 | 0.1500 | 20.00 |
| PLW9K-1000-40 | 250.0 | 25000 | 25.00 | 6250 | 0.1500 | 25.00 |
| PLW12K-60-1500 | 0.4 | 40 | 0.04 | 10 | 0.0005 | 0.04 |
| PLW12K-120-1200 | 1.0 | 100 | 0.10 | 25 | 0.0013 | 0.10 |
| PLW12K-400-600 | 6.7 | 666.6 | 0.67 | 166.6 | 0.0060 | 0.67 |
| PLW12K-600-400 | 15.0 | 1500 | 1.50 | 375 | 0.0300 | 1.50 |
| PLW12K-800-50 | 160.0 | 16000 | 16.00 | 4000 | 0.1200 | 16.00 |
| PLW12K-1000-50 | 200.0 | 20000 | 20.00 | 5000 | 0.1200 | 20.00 |
| PLW18K-60-1500 | 0.4 | 40 | 0.04 | 10 | 0.0004 | 0.04 |
| PLW18K-120-1500 | 0.8 | 80 | 0.08 | 20 | 0.0010 | 0.08 |
| PLW18K-400-800 | 5.0 | 500 | 0.50 | 125 | 0.0045 | 0.50 |
| PLW18K-600-600 | 10.0 | 1000 | 1.00 | 250 | 0.0200 | 1.00 |
| PLW18K-800-75 | 106.7 | 10666.6 | 10.67 | 2666.6 | 0.0800 | 10.67 |
| PLW18K-1000-75 | 133.3 | 13333.3 | 13.33 | 3333.3 | 0.0800 | 13.33 |
| PLW24K-60-1500 | 0.4 | 40 | 0.04 | 10 | 0.0003 | 0.04 |
| PLW24K-120-1500 | 0.8 | 80 | 0.08 | 20 | 0.0008 | 0.08 |
| PLW24K-400-1200 | 3.3 | 333.3 | 0.33 | 83.3 | 0.0030 | 0.33 |
| PLW24K-600-800 | 7.5 | 750 | 0.75 | 187.5 | 0.0150 | 0.75 |
| PLW24K-800-100 | 80.0 | 8000 | 8.00 | 2000 | 0.0600 | 8.00 |
| PLW24K-1000-100 | 100.0 | 10000 | 10.00 | 2500 | 0.0600 | 10.00 |
| PLW36K-60-1500 | 0.4 | 40 | 0.04 | 10 | 0.0003 | 0.04 |
| PLW36K-120-1500 | 0.8 | 80 | 0.08 | 20 | 0.0006 | 0.08 |
| PLW36K-400-1500 | 2.7 | 266.6 | 0.27 | 66.6 | 0.0022 | 0.27 |
| PLW36K-600-1000 | 6.0 | 600 | 0.60 | 150 | 0.0100 | 0.60 |
| PLW36K-800-150 | 53.3 | 5333.3 | 5.33 | 1333.3 | 0.0400 | 5.33 |
| PLW36K-1000-150 | 66.7 | 6666.6 | 6.67 | 1666.6 | 0.0400 | 6.67 |

Constant Resistance Mode

| | |
|-----------------------------------|------------------------------------|
| Transient Time Range : CRM / CRH | Same As CC Mode |
| Transient Time Range : CRL | Same As CV Mode |
| Temperature Coefficient : CRM / H | 300 ppm / °C of Minimum Resistance |
| Temperature Coefficient : CRL | 300 ppm / °C of Maximum Resistance |

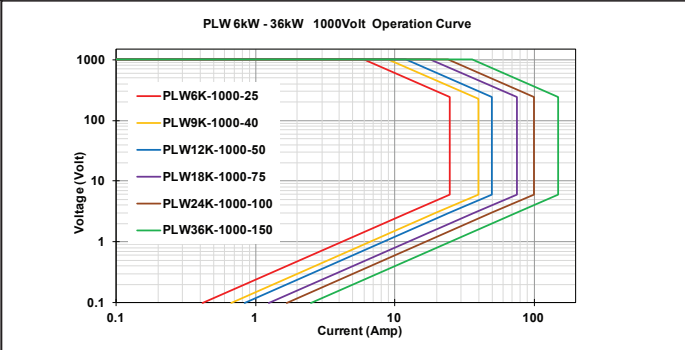
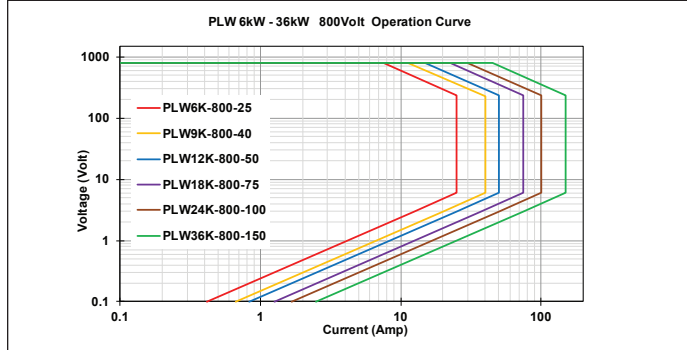
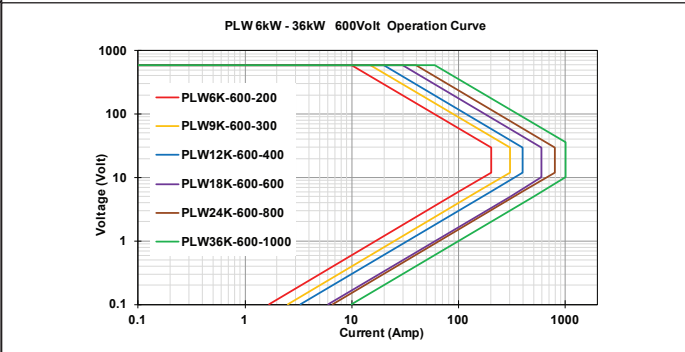
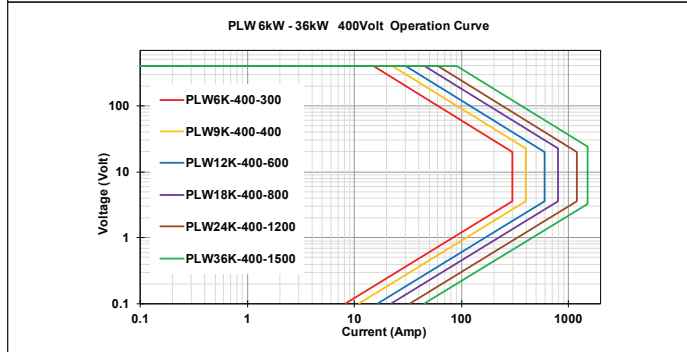
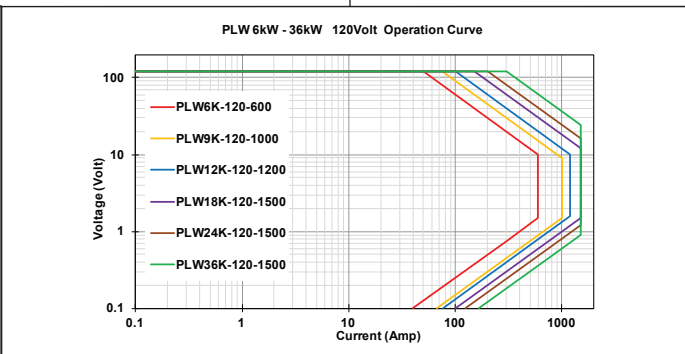
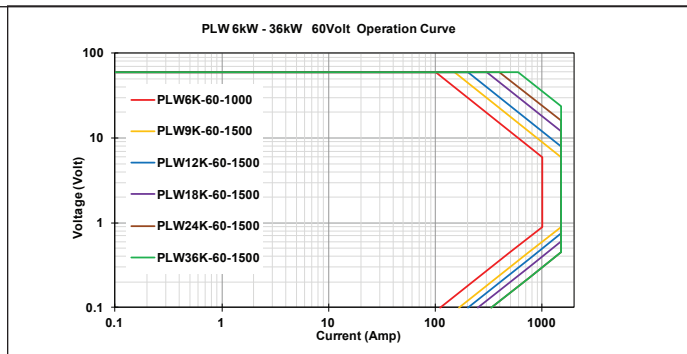
Constant Resistance Mode - Program : CR Resolution*2 - 1/16000 Of Rated Value

*1 All Mode Specification measure by 25°C room temperature unless otherwise specified
 *2 Transient Mode Specification must be x2

| Constant Voltage Mode | |
|------------------------------------|--|
| CVHigh Range | (0-V) V |
| CVMedium Range | 0 - (V / 2) V |
| CVLow Range | 0 - (/ 10) V |
| Temp Coefficient | 100 ppm / °C of Rated Voltage |
| Transient Time Range | |
| Fast Band(default, Osc1) | 0.500 ~ 51.19 ms |
| Slow Band(Osc2, Osc3) | 0.500 ~ 511.9 ms |
| CV Resolutions*2 | 1/16000 of rated voltage |
| CV Accuracy*2 (CVH, CVM, CVL) | 0.05% +/- (0.1% x Vmax) V |
| Display Specifications | |
| CV Resolution | 1/16000 of Rated Voltage |
| CV Accuracy (CVH, CVM, CCL) | 0.05% +/- (0.1% x V) V |
| Constant Power Mode | |
| CPHigh Range | (0-P) W |
| CPMedium Range | 0 - (P/2) W @ DC input current ≤ (I/2) A |
| CPLow Range | 0 - (P/10) W @ DC input current ≤ (I/10) A |
| Transient Time Range | Same as CC Mode |
| Temperature Coefficient | 300 ppm / °C of Rated Power |
| Constant Power Mode : Program | |
| CPHigh Accuracy*2 | 1.00% +/- (Px0.5%) W @ input current > (I/20) A, input voltage > (V/10) V |
| CPMedium Range | 1.00% +/- (Px0.5%) W @ input current > (I/100) A, input voltage > (V/10) V |
| CPLow Range | 1.00% +/- (Px0.5%) W @ input current > (I/1000) A, input voltage > (V/5) V |
| Program | CP Resolution*2 1/16000 of Rated Power |
| Constant Current Mode | |
| CCHigh Range | 0 - I A |
| CCMedium Range | 0 - (I/2) A |
| CCLow Range | 0 - (I/10) A |
| Transient Time Range | |
| Fast Band (default, Osc1) | 0.050 ~ 51.19 ms |
| Slow Band (Osc2, Osc3) | 0.500 ~ 511.9 ms |
| Temperature Coefficient | 100 ppm / °C of Rated Current |
| Constant Current Mode : Program | |
| CC Resolution*2 | 1/16000 of rated current |
| CCHigh Accuracy*2 LHM | 0.05% +/- (Ix0.1%) A |
| Constant Resistance Mode | |
| Transient Time Range : CRM / CRH | Same As CC Mode |
| Transient Time Range : CRL | Same As CV Mode |
| Temperature Coefficient : CRM / H | 300 ppm / °C of Minimum Resistance |
| Temperature Coefficient : CRL | 300 ppm / °C of Maximum Resistance |
| Constant Resistance Mode - Program | |
| CR Resolution*2 | 1/16000 of rated value |

PLW Series : Product Specifications

| External Programming Mode | |
|----------------------------------|---|
| Monitor Output Signal | 0-10 Volts output for 0 to full scale value |
| VMON Accuracy | 0.10% +/- (Vx0.1%) V |
| IMON Accuracy | 0.10% +/- (Ix0.1%) A |
| Analog Program | 0~10 Volts Input yields 0 -- selected full scale loading in all modes |
| Accuracy | Same As Internal ± 0.1% Rating |
| Input Impedance | 200 k Ω ± 1 % |
| BandWidth(-3dB) | Limited By Internal Transient Time |
| Remote Interface | GPIB / RS-232 / ETHERNET / USB |
| Programmable Protection | |
| Power (OPP) | |
| Range | (Px1.05/800) ~ (Px1.05) W |
| Resolution | (Px1.05/8000) W |
| Accuracy | 0.50% +/- (P x 21 / 8000) W |
| Voltage (OVP) | |
| Range | (Vx1.05/1600) ~ (Vx1.05) V |
| Resolution | (Vx1.05/16000) V |
| Accuracy | 0.20% +/- (Vx1.05/800) V |
| Current (OCP) | |
| Range | (Ix1.05/1600) ~ (Ix1.05) A |
| Resolution | (Ix1.05/16000) A |
| Accuracy | 0.20% +/- (Ix1.05/800) A |
| Under Voltage Lockout (UVL) | |
| Mode | Input On / Continuous |
| Range | ((V/4000*3) ~ Vmax) V |
| Resolution | (V/4000) V |
| Accuracy | 2.50% +/- (V/800) V |
| Anti-Oscillation | Default/ Osc1/ Osc2/ Osc3/ Disable |
| Protection | |
| Over Power (OP) | (Px1.05) +/- (Px0.02) W |
| Over Voltage (OV) | (Vx1.05) +/- (Vx0.02) V |
| Over Current (OC) | (Ix1.1) +/- (Ix1.1x0.01/1.05) A |
| Over Temp (OTP) | 50.00 +/- 5.000 °C |
| Reverse Max Current (RCP) | (Ix1.1) A |
| Short Max Current | (Ix1.02) A |
| Remote Inhibit (RI) | Short |
| Fault Indicator | SPDT Relay (30Vdc/0.5A or 125Vac/0.25A) |
| General | |
| AC Input | 95~240 Vac 48~62 Hz |
| Derating for higher temperatures | (-)1.67% Rated Power / °C |
| Operating Temperature | 5 °C ~ 40 °C |
| Fluid | |
| Valve | Normal closed |
| Flow Rate (Pmax) | >= 1.5~9.0 GPM @ 15 °C Fluid In |
| Derating for higher temperatures | -3% Rated Power / °C |
| Pressure | < 80 PSI |
| Pipe Size | 1/2" NPT Female (<=24kW models, 3/4" for higher power) |
| Decondensation | Valve thermal control |
| Transient Mode | |
| Frequency Range | 0.100 - 10,000 Hz |
| Duty Range | 1.000 - 100.0% |
| Transient Time Accuracy | 10.0% +/- 50% of Min Time |
| Dielectric Strength | |
| Primary Circuit To Chassis | 1500 Vac for 1 min |
| Primary Circuit To Load Terminal | 1500 Vac for 1 min |
| Load Terminal To Chassis | 1500 Vdc for 1 min |



绿测科技有限公司

广州总部：广州市番禺区陈边村金欧大道83号江潮创意园A栋208室
 深圳分公司：深圳市龙华区龙华街道 油松社区东环一路1号耀丰通工业园1-2栋2栋607
 南宁分公司：广西自由贸易试验区南宁片区五象大道401号五象航洋城1号楼3519号
 广州分公司：广州市南沙区凤凰大道89号中国铁建·凤凰广场B栋1201房
 电话：020-2204 2442
 传真：020-8067 2851
 邮箱：Sales@greentest.com.cn
 官网：www.greentest.com.cn



微信视频号



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绿测工场服务号