## Switching Power Supply S8VS（15／30／60／90／120／180／240－W Models）

## Wide Range of DIN－Rail Mount Micro Power Supplies with LED Display

－3－digit，7－segment LED display shows status at a glance for output voltage，output current，peak current，lifetime years， and run time hours．
－Incorporates a maintenance forecast monitor that displays the remaining life of the power supply，displayed in years．
－Run－time monitor model displays how long the output has been on，displayed in thousands of hours．
－ 15 and 30 W models have 22.5 mm width，which saves panel space．
－60，90，120， 180 and 240 W models have LED Displays．
－90，120， 180 and 240 W LED models have two outputs； one for undervoltage output and one for either the lifetime monitor or run－time monitor．
－All models are Lead－free．

## Approvals

－ 15 and 30 W models cULus，UL508 listed，Class 2 output，Class I Division 2
－60 W model
cULus，UL508 listed，Class 2 output，SEMI F47
－90，120， 180 and 240 W models cULus，UL508 listed
－All models are CE marked．

## Warranty

－All models have a 3－year warranty．


## Model Number Structure

## Model Number Legend

S8VS- $\qquad$

1. Power Ratings

015: 15 W
030: 30 W
060: 60 W
090: 90 W
120: 120 W
180: 180 W
240: 240 W
2. Output voltage

05: 5 V
12: 12 V
24: 24 V
3. Configuration

15-W, 30-W Models
None: Standard (No Display)

## 60-W Models

None: Standard (No Display)
A: With maintenance forecast monitor
B: With total run time monitor

90-W, 120-W, 180-W, 240-W Models
None: Standard (No Display)
A: With maintenance forecast monitor and undervoltage alarm (transistor (sinking))
B: With total run time monitor and undervoltage alarm (transistor (sinking))
AP: With maintenance forecast monitor and undervoltage alarm (transistor (sourcing))
BP: With total run time monitor and undervoltage alarm (transistor (sourcing))

## Ordering Information

Stock Note: Shaded models are normally stocked.

| Power ratings | Input voltage | Output voltage | Output current | Alarm output | Model number |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 15 W | 100 to 240 VAC | 5 V | 2.0 A | --- | S8VS-01505 (See note 1.) |
|  |  | 12 V | 1.2 A |  | S8VS-01512 |
|  |  | 24 V | 0.65 A |  | S8VS-01524 |
| 30 W |  | 5 V | 4.0 A | --- | S8VS-03005 (See note 2.) |
|  |  | 12 V | 2.5 A |  | S8VS-03012 |
|  |  | 24 V | 1.3 A |  | S8VS-03024 |
| 60 W |  | 24 V | 2.5 A | --- | S8VS-06024 |
|  |  |  |  | . | S8VS-06024A |
|  |  |  |  |  | S8VS-06024B |
| 90 W |  |  | 3.75 A | --- | S8VS-09024 |
|  |  |  |  | Sinking | S8VS-09024A |
|  |  |  |  | Sourcing | S8VS-09024AP |
|  |  |  |  | Sinking | S8VS-09024B |
|  |  |  |  | Sourcing | S8VS-09024BP |
| 120 W |  |  | 5 A | --- | S8VS-12024 |
|  |  |  |  | Sinking | S8VS-12024A |
|  |  |  |  | Sourcing | S8VS-12024AP |
|  |  |  |  | Sinking | S8VS-12024B |
|  |  |  |  | Sourcing | S8VS-12024BP |
| 180 W |  |  | 7.5 A | --- | S8VS-18024 |
|  |  |  |  | Sinking | S8VS-18024A |
|  |  |  |  | Sourcing | S8VS-18024AP |
|  |  |  |  | Sinking | S8VS-18024B |
|  |  |  |  | Sourcing | S8VS-18024BP |
| 240 W |  |  | 10 A | --- | S8VS-24024 |
|  |  |  |  | Sinking | S8VS-24024A |
|  |  |  |  | Sourcing | S8VS-24024AP |
|  |  |  |  | Sinking | S8VS-24024B |
|  |  |  |  | Sourcing | S8VS-24024BP |

Note: 1. The output capacity of the S8VS-01505 is 10 W .
2. The output capacity of the S8VS-03005 is 20 W .
3. Optional mounting brackets are shown on page 21.

## Specifications

## Ratings/Characteristics

| Power ratings Type |  |  | 15 W | 30 W |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Standard | Standard |
| Efficiency (typical) |  | 5-V models | 72\% min. | 70\% min. |
|  |  | 12-V models | 74\% min. | 76\% min. |
|  |  | 24-V models | 77\% min. | 80\% min. |
| Input | Voltage |  | 100 to 240 VAC ( 85 to 264 VAC) |  |
|  | Frequency |  | 50/60 Hz (47 to 450 Hz ) |  |
|  | Current | 100 V input |  | 0.9 A max. |
|  |  | 200 V input | 0.25 A max. | 0.6 A max. |
|  | Power factor |  | --- |  |
|  | Harmonic current emissions |  | Conforms to EN61000-3-2 |  |
|  | Leakage current | 100 V input | 0.5 mA max. |  |
|  |  | 200 V input | 1.0 mA max. |  |
|  | Inrush current (See note 1.) | 100 V input | 25 A max. (for a cold start at $25^{\circ} \mathrm{C}$ ) |  |
|  |  | 200 V input | 50 A max. (for a cold start at $25^{\circ} \mathrm{C}$ ) | - |
| Output | Voltage adjustment range (See note 2.) |  | -10\% to 15\% (with V.ADJ) (guaranteed) |  |
|  | Ripple |  | 2.0\% (p-p) max. (at rated input/output voltage) |  |
|  | Input variation influence |  | 0.5\% max. (at 85 to 264 VAC input, $100 \%$ load) |  |
|  | Load variation influence (rated input voltage) |  | $2.0 \%$ max. ( 5 V ), $1.5 \%$ max. ( $12 \mathrm{~V}, 24 \mathrm{~V}$ ), (with rated input, 0 to $100 \%$ load) |  |
|  | Temperature variation influence |  | $0.05 \% /{ }^{\circ} \mathrm{C}$ max. |  |
|  | Start up time (See note 1.) |  | $100 \mathrm{~ms} \mathrm{max}$. (at rated input/output voltage) | 1,000 ms max. (at rated input/output vol |
|  | Hold time (See note 1.) |  | $20 \mathrm{~ms} \mathrm{min}$. . at rated input/output voltage) |  |
| Additional functions | Overload protection (See note 1.) |  | 105\% to $160 \%$ of rated load current, voltage drop, automatic reset | $105 \%$ to $160 \%$ of rated load current, vo ation, automatic reset |
|  | Overvoltage protection (See note 1.) |  | Yes (a zener diode clamp) (See note 3.) | Yes (See note 4.) |
|  | Output voltage indication |  | No |  |
|  | Output current indication |  | No |  |
|  | Peak-hold current indication |  | No |  |
|  | Maintenance forecast monitor indication |  | No |  |
|  | Maintenance forecast monitor output |  | No |  |
|  | Total run time monitor indication |  | No |  |
|  | Total run time monitor output |  | No |  |
|  | Undervoltage alarm indication |  | Yes (color: red) |  |
|  | Undervoltage alarm output |  | No |  |
|  | Parallel operation |  | No |  |
|  | Series operation |  | Models with 24-V output: Possible for up to 2 Power Supplies (with external diode) Models with 5- or 12-V output: Not possible |  |
| Other | Operating ambient temperature |  | Refer to the derating curve in Engineering Data. (with no icing or condensation) |  |
|  | Storage temperature |  | -25 to $65^{\circ} \mathrm{C}$ |  |
|  | Operating ambient humidity |  | 25\% to 85\% (Storage humidity: 25\% to 90\%) |  |
|  | Dielectric strength |  | 3.0 kVAC for 1 min . (between all inputs and outputs; detection current: 20 mA ) 2.0 kVAC for 1 min . (between all inputs and PE terminals; detection current: 20 mA ) 1.0 kVAC for 1 min . (between all outputs and PE terminals; detection current: 20 mA ) |  |
|  | Insulation resistance |  | $100 \mathrm{M} \Omega$ min. (between all outputs and all inputs/ PE terminals) at 500 VDC |  |
|  | Vibration resistance |  | 10 to $55 \mathrm{~Hz}, 0.375-\mathrm{mm}$ single amplitude for 2 h each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  |
|  | Shock resistance |  | $150 \mathrm{~m} / \mathrm{s}^{2}, 3$ times each in $\pm \mathrm{X}, \pm \mathrm{Y}$, and $\pm Z$ directions |  |
|  | Output indicator |  | Yes (color: green) |  |
|  | EMI | Conducted Emissions | Conforms to EN61204-3 EN55011 Class B and based on FCC Class A |  |
|  |  | Radiated Emissions | Conforms to EN61204-3 EN55011 Class B |  |
|  | EMS |  | Conforms to EN61204-3 Class B |  |
|  | Approved standards |  | UL: UL508 (Listing; Class 2: Per UL1310), UL60950-1, UL1604 (Class I/Division2) cUL: CSA C22.2 No. 14 (Class 2), No.60950-1, No. 213 (Class I/Division2) EN/VDE: EN50178 (=VDE0160), EN60950-1 (=VDE0805) SELV (EN60950/EN50178/UL60950-1) According to VDE0106/P100, IP20 |  |
|  | Weight |  | 160 g max. | 180 g max. |

Note: 1. Refer to the Engineering Data section on page 17 for details.
2. If the V.ADJ adjuster is turned, the voltage will increase by more than $+15 \%$ of the voltage adjustment range. When adjusting the output voltage, confirm the actual output voltage from the Power Supply and be sure that the load is not damaged.
3. The overvoltage protection of the S8VS-015 $\square$ uses a zener diode clamp. If the internal feedback circuit is destroyed by any chance, the load may be destroyed by the clamped output voltage (approx. $140 \%$ to $190 \%$ of the rated output voltage).
4. To reset the protection, turn OFF the power supply for three minutes or longer and then turn the power supply back ON.

## Specifications

■ Ratings/Characteristics


Note: 1. Refer to the Engineering Data section on page 17 for details.
2. If the V.ADJ adjuster is turned, the voltage will increase by more than $+15 \%$ of the voltage adjustment range (by more than $+10 \%$ for $240-\mathrm{W}$ models). When adjusting the output voltage, confirm the actual output voltage from the Power Supply and be sure that the load is not damaged
3. To reset the protection, turn OFF the power supply for three minutes or longer and then turn the power supply back ON
4. Displayed on 7 -segment LED. (character height: 8 mm )
5. Resolution of output voltage indication: 0.1 V , Precision of output voltage indication: $\pm 2 \%$ (percentage of output voltage value, $\pm 1$ digit)
6. Resolution of output current indication: 0.1 A; Precision of output current indication: $\pm 5 \%$ F.S. $\pm 1$ digit max. (specified by rated output voltage)
7. Resolution of peak-hold current indication: 0.1 A; Precision of peak-hold current indication: $\pm 5 \%$ F.S. $\pm 1$ digit max. (specified by rated output voltage); Signal width required for peak-hold current: 20 ms
8. A Type and B Type: Sinking, AP Type and P Type: Sourcing
9. To ensure the emission rating, a ferrite ring core should be used in all cabling (TDK HF60T, HF70RH or equivalent model).

|  Power ratings <br> Item Type |  |  | 120 W |  |  | 180 W |  |  | 240 W |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Standard | Maintenance <br> forecast <br> monitor |  | Standard | Maintenance <br> forecast <br> monitor | Total run <br> time monitor | Standard | Maintenance <br> forecast <br> monitor | $\begin{array}{c\|} \hline \text { Total run } \\ \text { time monitor } \end{array}$ |
| Efficiency（typical） |  |  | 80\％min． |  |  |  |  |  |  |  |  |
| Input | Voltage |  | 100 to 240 VAC（ 85 to 264 VAC） |  |  |  |  |  |  |  |  |
|  | Frequency |  | $50 / 60 \mathrm{~Hz}$（ 47 to 63 Hz ） |  |  |  |  |  |  |  |  |
|  | Current | 100 V input | 1.9 A max． |  |  | 2．9 A max． |  |  | 3．8 A max． |  |  |
|  |  | 200 V input | 1．1 A max． |  |  | 1．6 A max． |  |  | 2．0 A max． |  |  |
|  | Power factor |  | 0.95 min． |  |  |  |  |  |  |  |  |
|  | Harmonic current emissions |  | Conforms to EN61000－3－2 |  |  |  |  |  |  |  |  |
|  | Leakage current | 100 V input | 0.5 mA max． |  |  |  |  |  |  |  |  |
|  |  | 200 V input | 1.0 mA max． |  |  |  |  |  |  |  |  |
|  | Inrush current （See note 1．） | 100 V input | 25 A max ．（for a cold start at $25^{\circ} \mathrm{C}$ ） |  |  |  |  |  |  |  |  |
|  |  | 200 V input | 50 A max ．（for a cold start at $25^{\circ} \mathrm{C}$ ） |  |  |  |  |  |  |  |  |
| Output | Voltage adjustment range （See note 2．） |  | $-10 \%$ to 15\％（with V．ADJ）（guaranteed） |  |  |  |  |  | $\pm 10 \%$（with V．ADJ）（guaranteed） |  |  |
|  | （Ripple |  | 2．0\％（p－p）max．（at rated input／output voltage） |  |  |  |  |  |  |  |  |
|  | Input variation influence |  | $\frac{2.0 \% ~(p-p) ~ m a x . ~(a t ~ r a t e d ~ i n p u t / o u t p u t ~ v o l t a g e) ~}{0.5 \% \text { max．（at } 85 \text { to } 264 \mathrm{VAC} \text { input，} 100 \% \text { load）}}$ |  |  |  |  |  |  |  |  |
|  | Load variation influence （rated input voltage） |  | $1.5 \%$ max．（with rated input， 0 to $100 \%$ load） |  |  |  |  |  |  |  |  |
|  | Temperature variation influence |  | 0．05\％／${ }^{\circ} \mathrm{C}$ max． |  |  |  |  |  |  |  |  |
|  | Start up time（See note 1．） |  | $1,000 \mathrm{~ms} \mathrm{max}$. （at rated input／output voltage） |  |  |  |  |  |  |  |  |
|  | Hold time（See note 1．） |  | $20 \mathrm{~ms} \mathrm{min}. \mathrm{(at} \mathrm{rated} \mathrm{input/output} \mathrm{voltage)}$ |  |  |  |  |  |  |  |  |
| Addition－ al func－ tions | Overload protection（See note 1．） |  | 105\％to 160\％of rated load current，voltage drop，intermittent，automatic reset |  |  |  |  |  |  | $105 \%$ to $160 \%$ of rated load current，voltage drop，auto－ matic reset |  |
|  | Overvoltage protection （See notes 1 and 3．） |  | Yes |  |  |  |  |  |  |  |  |
|  | Output voltage indication（See note 4．） |  | No $\quad$ Yes（selectable）（See note 5．） |  |  | No $\quad$ Yes（selectable）（See note 5．） |  |  | No | Yes（selectable）（See note 5．） |  |
|  | Output current indication（See note 4．） |  | No $\quad$ Yes（selectable）（See note 6．） |  |  | No $\quad$ Y｜les（selectable）（See note 6．） |  |  | $\begin{array}{\|l\|} \hline \text { No } \\ \hline \text { No } \\ \hline \end{array}$ | Yes（selectable）（See note 6．） |  |
|  | Peak－hold current indication （See note 4．） |  | No $\quad$ Yes（selectable）（See note 7．） |  |  | No | Yes（selectable）（See note 7．） |  |  | Yes（selectable）（See note 7．） |  |
|  | Maintenance forecast monitor indica－ tion（See note 4．） |  | No | $\begin{aligned} & \text { Yes (select- } \\ & \text { able) } \\ & \hline \end{aligned}$ | No | No | $\begin{aligned} & \text { Yes (select- } \\ & \text { able) } \end{aligned}$ | No | No | Yes （selectable） | No |
|  | Maintenance forecast monitor output |  | No | Yes（open collector out－ put）， 30 VDC max．， 50 mA max． （See note 8．） | No | No | Yes（open collector out－ put）， 30 VDC max．， 50 mA max． （See note 8．） | No | No | Yes（open collector out－ put）， 30 VDC max．， 50 mA max． <br> （See note 8．） | No |
|  | Total run time monitor indication （See note 4．） |  |  |  | Yes （selectable） | No |  | $\begin{array}{\|l} \hline \text { Yes } \\ \text { (selectable) } \end{array}$ | No |  | Yes （selectable） |
|  | Total run time monitor output |  | No Yes（open <br> collector out <br> put），， 0 VDC <br> max．，50 mA <br> max． <br> （See note 8．） |  |  | No Yes（open <br> collector out－ <br> put），30 VDC <br> max．， 50 mA <br> max． <br> （See note 8．） |  |  | No |  | Yes（open collector out－ put）， 30 VDC $\max ., 50 \mathrm{~mA}$ max． <br> （See note 8．） |
|  | Undervoltage alarm indication （See note 4．） |  | No $\quad$ Yes（selectable） |  |  | No | Yes（selectable） |  | No $\quad$ Yes（selectable） |  |  |
|  | Undervoltage alarm output terminals |  | No | Yes（open collector output）， 30 VDC max．， 50 mA max． （See note 8．） |  |  | Yes（open collector output）， 30 VDC max．， 50 mA max． （See note 8．） |  | No | Yes（open collector output）， 30 VDC max．， 50 mA max． （See note 8．） |  |
|  | Parallel operation |  | No |  |  |  |  |  |  |  |  |
|  | Series operation |  | Yes for up to 2 Power Supplies（with external diode） |  |  |  |  |  |  |  |  |
| Other | Operating ambient temperature |  | Refer to the derating curve in Engineering Data．（with no icing or condensation） |  |  |  |  |  |  |  |  |
|  | Storage temperature |  | -25 to $65^{\circ} \mathrm{C}$ |  |  |  |  |  |  |  |  |
|  | Operating ambient humidity |  | 25\％to 85\％（Storage humidity： $25 \%$ to $90 \%$ ） |  |  |  |  |  |  |  |  |
|  | Dielectric strength |  | 3.0 kVAC for 1 min ．（between all inputs and outputs／alarm outputs；detection current： 20 mA ） <br> 2.0 kVAC for 1 min ．（between all inputs and PE terminals；detection current： 20 mA ） <br> 1.0 kVAC for 1 min ．（between all outputs／alarm outputs and PE terminals；detection current： 20 mA ） <br> 500 VAC for 1 min ．（between all outputs and alarm outputs；detection current： 20 mA ） |  |  |  |  |  |  |  |  |
|  | Insulation resistance |  | $100 \mathrm{M} \Omega$ min．（between all outputs／alarm outputs and all inputs／PE terminals）at 500 VDC |  |  |  |  |  |  |  |  |
|  | Vibration resistance |  | 10 to $55 \mathrm{~Hz}, 0.375-\mathrm{mm}$ single amplitude for 2 h each in $\mathrm{X}, \mathrm{Y}$, and Z directions |  |  |  |  |  |  |  |  |
|  | Shock resistance |  | $150 \mathrm{~m} / \mathrm{s}^{2}, 3$ times each in $\pm \mathrm{X}, \pm \mathrm{Y}$ ，and $\pm \mathrm{Z}$ directions |  |  |  |  |  |  |  |  |
|  | Output indicator |  | Yes（color：green） |  |  |  |  |  |  |  |  |
|  | EMI | Conducted <br> Emissions | Conforms to EN61204－3 EN55011 Class A and based on FCC Class AConforms to EN61204－3 EN55011 Class B（See note 9．） |  |  |  |  |  |  |  |  |
|  |  | Radiated <br> Emissions | Conforms to Conforms to | $\begin{aligned} & \text { EN61204-3 EN55 } \\ & \text { N61204-3 EN55 } \end{aligned}$ | $\begin{aligned} & 5011 \text { Class A } \\ & 5011 \text { Class B (S } \end{aligned}$ | See note 9．） |  |  |  |  |  |
|  | EMS |  | Conforms to EN61204－3 Class B |  |  |  |  |  |  |  |  |
|  | Approved standards |  | ```UL: UL508 (Listing), UL60950 cUL: CSA C22.2 No. 14, No. 60950 EN/VDE: EN50178 (=VDE0160), EN60950 (=VDE0805) SELV (EN60950/UL50178/UL60950-1) According to VDE0106/P100, IP20``` |  |  |  |  |  |  |  |  |
|  | Weight |  | 550 g max ． |  |  | 850 g max ． |  |  | 1，150 g max． |  |  |

