

## Simple function, 50 to 600W DC-DC converters

### Features

- ◆ High Density
- ◆ Wide Range Input
- ◆ Output adjustment Capability
- ◆ Remote On/Off
- ◆ Fixed Switching Frequency
- ◆ International Safety Approvals
- ◆ Low component count



### Key Market Segments & Applications



| Specifications              |       |   |            |           |           |           |           |           |
|-----------------------------|-------|---|------------|-----------|-----------|-----------|-----------|-----------|
| Model                       |       | 3.3V  | 5V         | 12V       | 15V       | 24V       | 28V       | 48V       |
| Input range                 | VDC   | 24V nom: 18-36, 48V nom: 36-76V, 110V nom: 82-185V, 280V nom: 200-400V                                      |            |           |           |           |           |           |
| Output Voltage Adj. Range   | VDC   | 2.97~3.63   | 4.5~5.5    | 10.8~13.2 | 13.5~16.5 | 21.6~26.4 | 25.2~30.8 | 43.2~52.8 |
| Line Regulation             | -     | 0.4% or 20mV (whichever is greater) over entire input range with constant load                              |            |           |           |           |           |           |
| Load Regulation             | -     | 0.8% or 40mV (whichever is greater) from no load to full load with constant input line                      |            |           |           |           |           |           |
| Ripple and Noise            | pk-pk | 100mV   |            | 150mV     |           | 240mV     | 280mV     | 480mV     |
| Series Operation            | -     | Possible - Refer to installation manual   |            |           |           |           |           |           |
| Over Voltage Protection     | -     | 150 - 180%  | 125 - 145% |           |           |           |           |           |
| Overload Protection         | -     | Approximately 105 - 140%, automatic recovery  |            |           |           |           |           |           |
| Remote On/Off               | -     | Low = ON, Open = OFF  |            |           |           |           |           |           |
| Remote Sensing              | -     | PH100S, PH150S, PH300S, PH600S models   |            |           |           |           |           |           |
| Parallel operation          | -     | PH300S & PH600S only: Requires external circuitry   |            |           |           |           |           |           |
| Inverter Good signal        | -     | PH300S & PH600S only: Signal available for status of inverter   |            |           |           |           |           |           |
| Thermal Protection          | -     | Internal sensing, self resetting  |            |           |           |           |           |           |
| Cooling                     | -     | Conduction or forced air. See application notes for cooling and heatsink selection                          |            |           |           |           |           |           |
| Operating Temperature Range | -     | Baseplate temperature -20°C to +85°C (100°C on PH300 & PH600).<br>-40°C start up possible - consult factory |            |           |           |           |           |           |
| Storage Temperature         | -     | -40°C to +85°C (+100°C on PH300 & PH600)  |            |           |           |           |           |           |
| Temperature Coefficient     | -     | 0.02%/°C  |            |           |           |           |           |           |
| Isolation                   | -     | Input to output: 3000VAC, Input to Baseplate: 2500VAC(1)  |            |           |           |           |           |           |
| Isolation Resistance        | -     | Output to Baseplate -100MΩ at 500VDC and 70%RH  |            |           |           |           |           |           |
| Safety Agency Approval      | -     | UL60950-1, CSA60950-1, EN60950-1 and CE Mark.   |            |           |           |           |           |           |
| Warranty                    | -     | Two years   |            |           |           |           |           |           |

Note: See Installation Manual for full details, test methods of parameters and application notes

| <b>Model Selector</b>      |                    |                  |            |              |              |               |
|----------------------------|--------------------|------------------|------------|--------------|--------------|---------------|
| Nominal Output Voltage (V) | Output Current (A) | Output Power (W) | 24V input  | 48V input    | 110V input   | 280V input    |
| 3.3                        | 10.0               | 33.0             | -          | PH50S48-3.3  | -            | PH50S280-3.3  |
| 3.3                        | 15.0               | 49.5             | -          | PH75S48-3.3  | -            | PH75S280-3.3  |
| 3.3                        | 20.0               | 66.0             | -          | PH100S48-3.3 | -            | PH100S280-3.3 |
| 3.3                        | 30.0               | 99.0             | -          | PH150S48-3.3 | -            | PH150S280-3.3 |
| 3.3                        | 50.0               | 165.0            | -          | -            | -            | PH300S280-3.3 |
| 3.3                        | 100.0              | 330.0            | -          | -            | -            | PH600S280-3.3 |
| 5.0                        | 10.0               | 50.0             | PH50S24-5  | PH50S48-5    | PH50S110-5   | PH50S280-5    |
| 5.0                        | 15.0               | 75.0             | -          | PH75S48-5    | PH75S110-5   | PH75S280-5    |
| 5.0                        | 20.0               | 100.0            | -          | PH100S48-5   | -            | PH100S280-5   |
| 5.0                        | 30.0               | 150.0            | -          | PH150S48-5   | PH150S110-5  | PH150S280-5   |
| 5.0                        | 50.0               | 250.0            | -          | -            | -            | PH300S280-5   |
| 5.0                        | 100.0              | 500.0            | -          | -            | -            | PH600S280-5   |
| 12.0                       | 4.2                | 50.0             | PH50S24-12 | PH50S48-12   | PH50S110-12  | PH50S280-12   |
| 12.0                       | 6.3                | 75.0             | -          | PH75S48-12   | PH75S110-12  | PH75S280-12   |
| 12.0                       | 8.4                | 100.0            | -          | PH100S48-12  | -            | PH100S280-12  |
| 12.0                       | 12.5               | 150.0            | -          | PH150S48-12  | PH150S110-12 | PH150S280-12  |
| 12.0                       | 25.0               | 300.0            | -          | -            | -            | PH300S280-12  |
| 12.0                       | 50.0               | 600.0            | -          | -            | -            | PH600S280-12  |
| 15.0                       | 3.4                | 50.0             | PH50S24-15 | PH50S48-15   | PH50S110-15  | PH50S280-15   |
| 15.0                       | 5.0                | 75.0             | -          | PH75S48-15   | PH75S110-15  | PH75S280-15   |
| 15.0                       | 6.7                | 100.0            | -          | PH100S48-15  | -            | PH100S280-15  |
| 15.0                       | 10.0               | 150.0            | -          | PH150S48-15  | PH150S110-15 | PH150S280-15  |
| 15.0                       | 20.0               | 300.0            | -          | -            | -            | PH300S280-15  |
| 15.0                       | 40.0               | 600.0            | -          | -            | -            | PH600S280-15  |
| 24.0                       | 2.1                | 50.0             | PH50S24-24 | PH50S48-24   | PH50S110-24  | PH50S280-24   |
| 24.0                       | 3.2                | 75.0             | -          | PH75S48-24   | PH75S110-24  | PH75S280-24   |
| 24.0                       | 4.2                | 100.0            | -          | PH100S48-24  | -            | PH100S280-24  |
| 24.0                       | 6.3                | 150.0            | -          | PH150S48-24  | PH150S110-24 | PH150S280-24  |
| 24.0                       | 12.5               | 300.0            | -          | -            | -            | PH300S280-24  |
| 24.0                       | 25.0               | 600.0            | -          | -            | -            | PH600S280-24  |
| 28.0                       | 1.8                | 50.0             | PH50S24-28 | PH50S48-28   | PH50S110-28  | PH50S280-28   |
| 28.0                       | 2.7                | 75.0             | -          | PH75S48-28   | PH75S110-28  | PH75S280-28   |
| 28.0                       | 3.6                | 100.0            | -          | PH100S48-28  | -            | PH100S280-28  |
| 28.0                       | 5.4                | 150.0            | -          | PH150S48-28  | PH150S110-28 | PH150S280-28  |
| 28.0                       | 10.8               | 302.0            | -          | -            | -            | PH300S280-28  |
| 28.0                       | 21.5               | 602.0            | -          | -            | -            | PH600S280-28  |
| 48.0                       | 6.3                | 302.0            | -          | -            | -            | PH300S280-48  |
| 48.0                       | 12.5               | 600.0            | -          | -            | -            | PH600S280-48  |

| <b>Pinout</b>   |                            |
|-----------------|----------------------------|
| Pin Description | Function                   |
| -Vin            | Negative Input Terminal    |
| +Vin            | Positive Input Terminal    |
| +S              | Positive Remote sense      |
| -S              | Negative Remote sense      |
| +V              | Positive Output Terminal   |
| -V              | Negative Output Terminal   |
| IOG             | Inverter Good Signal       |
| TRIM            | Output adjustment trim pin |
| CNT             | On/Off Control Terminal    |
| CS              | Current Monitor Signal     |

| <b>Other DC-DC Products</b> |   |
|-----------------------------|---|
| PH Full Function            | 50 - 300W, full function versions of PH |
| PAQ, PAH, PAF               | 50 - 700W quarter, half & full bricks   |
| PX                          | 10-40W, 12-48V input, DC-DC             |
| CC-E                        | 1.5-30W, 5-48V input, DC-DC             |

For Additional Information, please visit [us.tdk-lambda.com/lp/products/ph-series-sf.htm](http://us.tdk-lambda.com/lp/products/ph-series-sf.htm)



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