

## Full function, 50 to 300W DC-DC converters

### Features

- ◆ High Density
- ◆ Wide Range Input
- ◆ Wide output adjustment capability
- ◆ Remote On/Off
- ◆ Fixed Switching Frequency
- ◆ International Safety Approvals
- ◆ Parallel Operation
- ◆ Low component count
- ◆ Signals to support N+1 redundancy



### Key Market Segments & Applications



### Specifications

| Model                       |       | 2V                                                                                        | 3.3V      | 5V  | 12V        | 15V  | 24V      | 28V       |
|-----------------------------|-------|-------------------------------------------------------------------------------------------|-----------|-----|------------|------|----------|-----------|
| Input range                 | VDC   | 24V nom: 18-36, 48V nom: 36-76V, 110V nom: 82-185V, 280V nom: 200-400V                    |           |     |            |      |          |           |
| Output Voltage Adj. Range   | VDC   | 1.6~2.4                                                                                   | 2.64~3.96 | 2~6 | 4.8~14.4   | 6~18 | 9.6~28.8 | 11.2~33.6 |
| 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     |
| 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              | -     | Yes                                                                                       |           |     |            |      |          |           |
| Parallel operation          | -     | Using current share pin (PC). Will share within 5%, see app. notes for connection details |           |     |            |      |          |           |
| Inverter Good signal        | -     | Signal available for status of inverter                                                   |           |     |            |      |          |           |
| Auxiliary Bias Supply       | -     | 8V 10mA auxiliary voltage to supply power to interface circuits (AUX pin)                 |           |     |            |      |          |           |
| Thermal Protection          | -     | Internal sensing, self resetting                                                          |           |     |            |      |          |           |
| Cooling                     | -     | Conduction or forced air. See application notes for cooling and heatsink selection        |           |     |            |      |          |           |
| Operating Temperature Range | °C    | Baseplate temperature -20°C to +85°C. -40°C start up possible - consult factory           |           |     |            |      |          |           |
| Storage Temperature         | °C    | -40°C to +85°C                                                                            |           |     |            |      |          |           |
| Temperature Coefficient     | -     | 0.02%/°C                                                                                  |           |     |            |      |          |           |
| Isolation                   | -     | Input to output: 3000VAC, Input to Baseplate: 2500VAC(1)                                  |           |     |            |      |          |           |
| Isolation Resistance        | -     | Output to Baseplate -100MOhm at 500VDC and 70%RH                                          |           |     |            |      |          |           |
| Safety Agency Approval      | -     | UL60950-1, CSA60950-1, EN60950-1 and CE Mark.                                             |           |     |            |      |          |           |
| Warranty                    | yrs   | Two years                                                                                 |           |     |            |      |          |           |

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

(1) 24V input models input to output: 2kVAC; input to baseplate: 2kVAC

## Not Recommended For New Designs

## Model Selector

| Nominal Output Voltage (V) | Output Current (A) | Output Power (W) | 24V input   | 48V input   | 110V input   | 280V input   |
|----------------------------|--------------------|------------------|-------------|-------------|--------------|--------------|
| 2.0                        | 15.0               | 30               | -           | PH75F48-2   | PH75F110-2   | PH75F280-2   |
| 2.0                        | 20.0               | 40               | PH100F24-2  | -           | -            | -            |
| 2.0                        | 30.0               | 60               | -           | PH150F48-2  | PH150F110-2  | PH150F280-2  |
| 2.0                        | 60.0               | 120              | -           | PH300F48-2  | PH300F110-2  | PH300F280-2  |
| 3.3                        | 15.0               | 45               | -           | PH75F48-3   | PH75F110-3   | PH75F280-3   |
| 3.3                        | 20.0               | 60               | PH100F24-3  | -           | -            | -            |
| 3.3                        | 30.0               | 90               | -           | PH150F48-3  | PH150F110-3  | PH150F280-3  |
| 3.3                        | 60.0               | 180              | -           | PH300F48-3  | PH300F110-3  | PH300F280-3  |
| 5.0                        | 15.0               | 75               | -           | PH75F48-5   | PH75F110-5   | PH75F280-5   |
| 5.0                        | 20.0               | 100              | PH100F24-5  | -           | -            | -            |
| 5.0                        | 30.0               | 150              | -           | PH150F48-5  | PH150F110-5  | PH150F280-5  |
| 5.0                        | 60.0               | 300              | -           | PH300F48-5  | PH300F110-5  | PH300F280-5  |
| 12.0                       | 6.3                | 75               | -           | PH75F48-12  | PH75F110-12  | PH75F280-12  |
| 12.0                       | 8.4                | 100              | PH100F24-12 | -           | -            | -            |
| 12.0                       | 12.5               | 150              | -           | PH150F48-12 | PH150F110-12 | PH150F280-12 |
| 12.0                       | 20.0               | 240              | PH300F24-12 | -           | -            | -            |
| 12.0                       | 25.0               | 300              | -           | PH300F48-12 | PH300F110-12 | PH300F280-12 |
| 15.0                       | 5.0                | 75               | -           | PH75F48-15  | PH75F110-15  | PH75F280-15  |
| 15.0                       | 6.7                | 100              | PH100F24-15 | -           | -            | -            |
| 15.0                       | 10.0               | 150              | -           | PH150F48-15 | PH150F110-15 | PH150F280-15 |
| 15.0                       | 20.0               | 300              | -           | PH300F48-15 | PH300F110-15 | PH300F280-15 |
| 24.0                       | 3.2                | 75               | -           | PH75F48-24  | PH75F110-24  | PH75F280-24  |
| 24.0                       | 4.2                | 100              | PH100F24-24 | -           | -            | -            |
| 24.0                       | 6.3                | 150              | -           | PH150F48-24 | PH150F110-24 | PH150F280-24 |
| 24.0                       | 12.6               | 300              | -           | PH300F48-24 | PH300F110-24 | PH300F280-24 |
| 28.0                       | 2.7                | 50               | -           | PH75F48-28  | PH75F110-28  | PH75F280-28  |
| 28.0                       | 3.6                | 100              | PH100F24-28 | -           | -            | -            |
| 28.0                       | 5.4                | 150              | -           | PH150F48-28 | PH150F110-28 | PH150F280-28 |
| 28.0                       | 10.8               | 300              | PH300F24-28 | PH300F48-28 | PH300F110-28 | PH300F280-28 |

## Pinout

| 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                  |
| AUX             | Bias voltage output (secondary reference) |
| IOG             | DC Good                                   |
| TRIM            | Output adjustment trim pin                |
| CNT             | On/Off Control Terminal                   |
| SG              | Signal (CNT RTN)                          |
| PC              | Parallel control connection               |

## Other DC-DC Products

|                 |                                       |
|-----------------|---------------------------------------|
| PH Simple Func. | 50 - 300W, lower cost version 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-ff.htm](http://us.tdk-lambda.com/lp/products/ph-series-ff.htm)



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