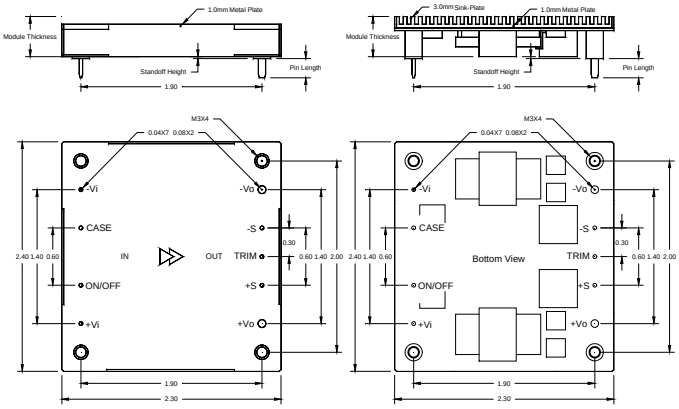
Glary Power Technology

PH 310W/50A
1/2 Brick DC/DC Converters



The PH series provides up to 310W/50A outputs with industry standard half brick package. The efficient Non-SR technology combining with ultra low leakage inductance magnetic gives converters "SR-like" conversion efficiency and high reliability, the single component side board designed with Sink-Plate technology eliminate the hot spot gives converter better thermal performance. Modules are designed for Telecom, Servers, Networking equipments and other applications that use a 24V or 48V (36~75V) input bus.

- High efficiency ..... 90%@28V/11A
  ..... 89%@15V/17A
  ..... 88%@12V/21A
- High power density .....144W/in^3
- Low profile ..... 0.36"(9.1mm)
- Standard footprint ..... 2.30"×2.40"
- Operation temperature ..... -40°C~105°C
- Sink-Plate (SP) flexible thermal managing capability (see drawing)

Part Number *	Maximum Input		Maximum Output		Efficiency
PH48280ABCD-EF	36V~75V	355W	28V/11A	310W	90%
PH48240ABCD-EF	36V~75V	291W	24V/11A	252W	88%
PH48150ABCD-EF	36V~75V	288W	15V/17A	255W	89%
PH48120ABCD-EF	36V~75V	291W	12V/21A	252W	88%
PH48050ABCD-EF	36V~75V	296W	5.0V/50A	250W	85%

Part Number *	Maximum Input		Maximum Output		Efficiency
PH24280ABCD-EF	18V~36V	355W	28V/11A	310W	88%
PH24240ABCD-EF	18V~36V	291W	24V/11A	252W	87%
PH24150ABCD-EF	18V~36V	288W	15V/17A	255W	89%
PH24120ABCD-EF	18V~36V	291W	12V/21A	252W	87%
PH24050ABCD-EF	18V~36V	296W	5.0V/50A	250W	85%

* Options for **PH Series** are listed as follows:

A (Enable Logic): **P**: Positive **N**: Negative
B (Pin Dimension): **0**: 0.12" **1**: 0.16" **2**: 0.20" **3**: 0.24"
C (Standoff Height): **0**: 0.02" **1**: 0.08" **2**: 0.16"
D (Base-Plate/Module Thickness): **M**: 1.0mm Metal Plate/0.34" **A**: 3.0mm Sink-Plate/0.42" **B**: 5.0mm Sink-Plate/0.50"
E: 1.0mm Metal Plate with Metal Enclosure/0.34"
EF (Output): **00** to **99** for output current rating

Example: **PH48120N00E-21** is a ***PH*** series half brick 48V to 12V/21A dc/dc converter with negative control logic, 0.12" pin length, 0.02" of standoff height and 1.0mm Metal Plate with Metal Enclosure. The total height of this module is 0.02"+0.34"=0.36"

ABSOLUTE MAXIMUM RATINGS

Temperature	Operation	-40°C to +120°C
	Storage	-55°C to +125°C
Input Voltage Range	Operation:	
	24V Models	-0.5V to +40Vdc
	48V Models	-0.5V to +80Vdc
	Transient (100mS):	
	24V Models	50V Maximum
	48V Models	100V Maximum
Isolation Voltage	Input to Output	2.0KV Minimum
	Input to Case	1.0KV Minimum
	Output to Case	1.0KV Minimum
Remote Control Voltage		-0.5V to +12Vdc

GENERAL SPECIFICATIONS

Conversion Efficiency	Typical	See table
Switching Frequency	Typical	360KHz
MTBF	Bellcore	4.56×10^6 hrs @GB.
OTP	Internal	115°C
Weight		1.9 oz or 3.2 oz
Size		2.30"×2.40"×0.36"

CONTROL FUNCTIONS

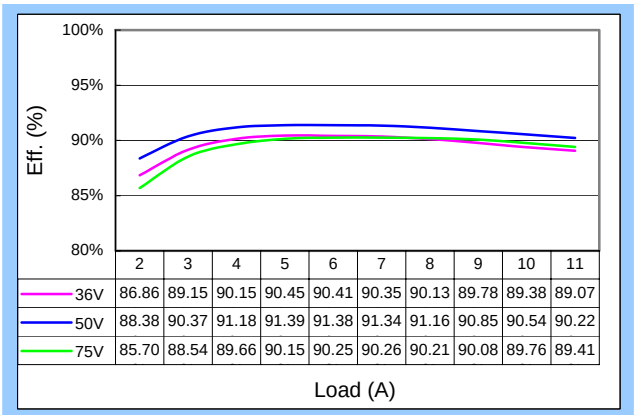
Remote Control	Logic High	+3.0V t0 +6.5V
	Logic Low	0V to +1.0V
Input Current of Remote Control Pin		-0.5mA ~ +1.5mA

INPUT SPECIFICATIONS

Operation Voltage Range	24V Models	+18V to +36Vdc
	48V Models	+36V to +75Vdc
Reflected Ripple Current	L_{EXT} = 10uH	20mA Max
Power ON Voltage Ranges	24V Models	+17.5V to +17.9Vdc
	48V Models	+35.0V to +35.8Vdc
Power OFF Voltage Ranges	24V Models	+17.0V to +17.4Vdc
	48V Models	+34.0V to +34.8Vdc
Off State Input Current	V_{NOM}	6mA Max
Latch-State Input Current	V_{NOM}	8mA Max
Input Capacitance	24V Models	33.0uF Max
	48V Models	6.8uF Max

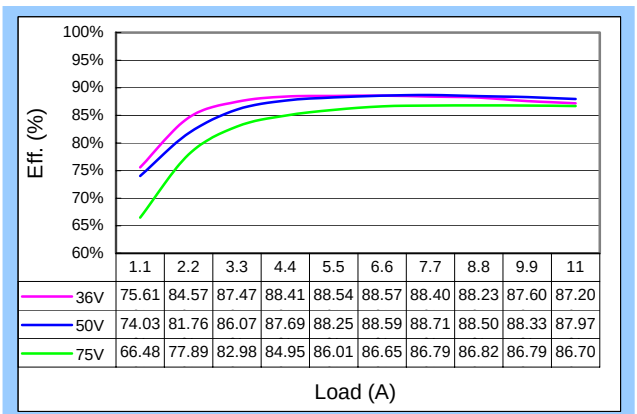
OUTPUT SPECIFICATIONS

Voltage Accuracy	Typical	±1%
Line Regulation	Full Input Range	±0.2%
Load Regulation	10%~100%	±0.2%
Temperature Drift	-40°C ~100°C	±0.02%/°C
Output Tolerance Band	All Conditions	±3%
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) V_o
Over Voltage Protection	V_{NOM}, 10% Load	115~130 %Vo
Output Current Limits	V_{NOM}	105%~125%
Voltage Trim	V_{NOM}, 10% Load	±10%
Input Ripple Rejection (<1KHz)	V_{NOM}, Full Load	-50dB
Step Load (2.5A/uS)	50%~75% Load	300mV/500uS
Start-Up Delay Time	V_{NOM}, Full Load	20mS/250mS



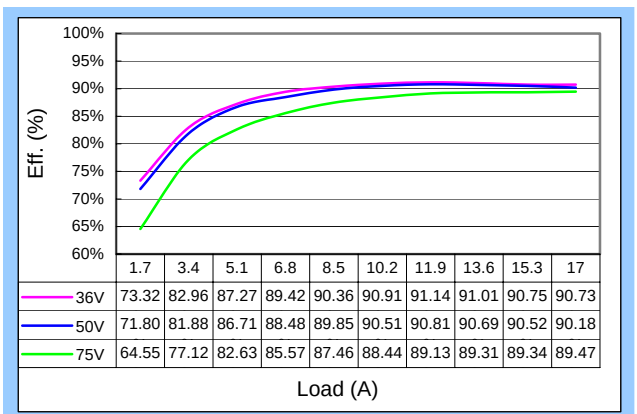
	2	3	4	5	6	7	8	9	10	11
36V	86.86	89.15	90.15	90.45	90.41	90.35	90.13	89.78	89.38	89.07
50V	88.38	90.37	91.18	91.39	91.38	91.34	91.16	90.85	90.54	90.22
75V	85.70	88.54	89.66	90.15	90.25	90.26	90.21	90.08	89.76	89.41

Efficiency Plot of CPH48280ABCD-11



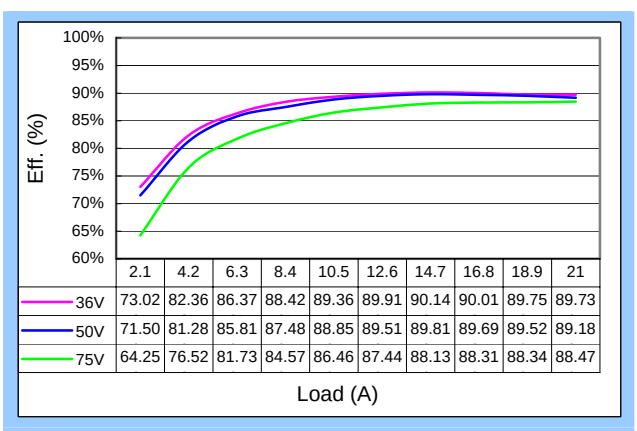
	1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9	11
36V	75.61	84.57	87.47	88.41	88.54	88.57	88.40	88.23	87.60	87.20
50V	74.03	81.76	86.07	87.69	88.25	88.59	88.71	88.50	88.33	87.97
75V	66.48	77.89	82.98	84.95	86.01	86.65	86.79	86.82	86.79	86.70

Efficiency Plot of CPH48240ABCD-11



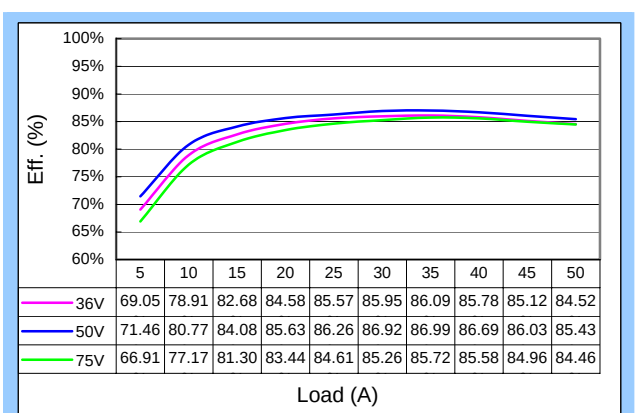
	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3	17
36V	73.32	82.96	87.27	89.42	90.36	90.91	91.14	91.01	90.75	90.73
50V	71.80	81.88	86.71	88.48	89.85	90.51	90.81	90.69	90.52	90.18
75V	64.55	77.12	82.63	85.57	87.46	88.44	89.13	89.31	89.34	89.47

Efficiency Plot of CPH48150ABCD-17



	2.1	4.2	6.3	8.4	10.5	12.6	14.7	16.8	18.9	21
36V	73.02	82.36	86.37	88.42	89.36	89.91	90.14	90.01	89.75	89.73
50V	71.50	81.28	85.81	87.48	88.85	89.51	89.81	89.69	89.52	89.18
75V	64.25	76.52	81.73	84.57	86.46	87.44	88.13	88.31	88.34	88.47

Efficiency Plot of CPH48120ABCD-21



	5	10	15	20	25	30	35	40	45	50
36V	69.05	78.91	82.68	84.58	85.57	85.95	86.09	85.78	85.12	84.52
50V	71.46	80.77	84.08	85.63	86.26	86.92	86.99	86.69	86.03	85.43
75V	66.91	77.17	81.30	83.44	84.61	85.26	85.72	85.58	84.96	84.46

Efficiency Plot of PH48050ABCD-50

NOTE

1. 20MHz bandwidth current probe measured without an external filter.
2. Output ripple and noise is measured by using the proposed test method of Glary Power Technology Co. Ltd.
3. Input fusing is required and recommended to base on surge current and maximum input current.
4. Case and base-plate should be connected to AC ground to maintain good EMC performance.
5. Case and base-plate should be inaccessible to prevent the damage from highly operating temperature.
6. Contact Glary Power Technology for non-standard inquiry.