

# DC-DC High Power

## 50-200 Watts DCH Series



## THE XPERTS IN POWER

- Upto 89% Efficiency
- 40 °C Operation
- High Reliability
- Industry Standard Package
- Overcurrent Protection
- 40% to +10% Adjustment
- 2:1 Input Voltage Range

### Specification

#### Input

- Input Voltage • 18-36 VDC, 36-76 VDC

#### Output

- Output Voltage • See Tables
- Output Voltage Adjustment • 60-110% (60-105% for input of 36-40 VDC & 18-20 VDC)
- Minimum Load • No minimum load required
- Start Up Delay • 200 ms max (nom Vin & 100% load)
- Initial Set Accuracy • -3/+5% typically
- Drift • ±0.9% max
- Line Regulation • See Table
- Load Regulation • See Table
- Ripple & Noise • 200-250 mV pk-pk depending on model 20 MHz bandwidth
- Overvoltage Protection • See Table recycle input to reset
- Overcurrent Protection • Operates at >105% of rated current auto recovery
- Overtemperature Protection • Baseplate >+100 °C thermal protection is activated & output voltage is shutdown, after cooling recycle input to reset
- Temperature Coefficient • ±0.03%/°C max
- Remote Sense • Compensates for 0.3 V line drop max, when not used the remote sense terminals must be connected locally
- Remote ON/OFF • Negative logic L: (or short) ON, H: (or open) OFF (for positive logic add suffix '-R' to model number)

#### General

- Efficiency • 79-89% (See Tables)
- Isolation • 1500 VDC Input to Output  
1500 VDC Input to Ground  
500 VDC Output to Ground
- Switching Frequency • 370 kHz (310 kHz DCH50)
- Heatsinks • Contact Sales

#### Environmental

- Operating Temperature • -40 °C to +100 °C baseplate
- Storage Temperature • -40 °C to +100 °C
- Humidity • 20-95% RH non-condensing
- Operating Altitude • 9000 m
- Shock • 20 G, 11 ms once each along X, Y & Z axis
- Vibration • 5 G 10-55 Hz  
3 mins period for 60 mins each along X, Y & Z axis

#### EMC & Safety

- Emissions • EN55022 Level B conducted  
EN55022 Level B radiated  
External components required  
Contact Sales for Application Note
- ESD Susceptibility • EN61000-4-4 Level 2
- Radiated Susceptibility • EN61000-4-3 Level 3
- EFT/Burst • EN61000-4-4 Level 3
- Surge • EN61000-4-5 Level 3
- Safety Approvals • UL1950, c-UL, EN60950

# OUTPUT VOLTAGE & CURRENT RATINGS

DCH

Output Voltage	Output Current	OVP Set Point	Regulation		Ripple & Noise Pk-Pk	18-36 VDC IN		36-76 VDC IN	
			Line	Load		Efficiency Typ.	Model Number	Efficiency Typ.	Model Number
1.8 V	11.7 A	2.16-2.88 V	10 mV	10 mV	120 mV	71%	DCH5024S1V8	71%	DCH5048S1V8
2.5 V	11.7 A	3.00-4.00 V	10 mV	10 mV	120 mV	77%	DCH5024S2V5	77%	DCH5048S2V5
3.3 V	11.7 A	4.00 - 5.50 V	10 mV	10 mV	200 mV	79%	DCH5024S03	80%	DCH5048S03
5.0 V	10.0 A	5.70 - 7.00 V	10 mV	10 mV	200 mV	84%	DCH5024S05	85%	DCH5048S05
12.0 V	4.2 A	13.80 - 16.80 V	24 mV	24 mV	200 mV	88%	DCH5024S12	89%	DCH5048S12
15.0 V	3.4 A	17.25 - 21.00 V	30 mV	30 mV	200 mV	87%	DCH5024S15	88%	DCH5048S15
24.0 V	2.1 A	27.60 - 33.60 V	48 mV	48 mV	250 mV	87%	DCH5024S24	88%	DCH5048S24
28.0 V	1.8 A	32.20 - 39.20 V	56 mV	56 mV	250 mV	87%	DCH5024S28	88%	DCH5048S28
1.8 V	23.4 A	2.16 - 2.88 V	10 mV	10 mV	120 mV	71%	DCH10024S1V8	71%	DCH10048S1V8
2.5 V	23.4 A	3.00 - 4.00 V	10 mV	10 mV	120 mV	77%	DCH10024S2V5	77%	DCH10048S2V5
3.3 V	23.4 A	4.00 - 5.50 V	10 mV	10 mV	200 mV	79%	DCH10024S03	80%	DCH10048S03
5.0 V	20.0 A	5.70 - 7.00 V	10 mV	10 mV	200 mV	83%	DCH10024S05	84%	DCH10048S05
12.0 V	8.4 A	13.80 - 16.80 V	24 mV	24 mV	200 mV	88%	DCH10024S12	89%	DCH10048S12
15.0 V	6.7 A	17.25 - 21.00 V	30 mV	30 mV	200 mV	87%	DCH10024S15	88%	DCH10048S15
24.0 V	4.2 A	27.60 - 33.60 V	48 mV	48 mV	250 mV	87%	DCH10024S24	88%	DCH10048S24
28.0 V	3.6 A	32.20 - 39.20 V	56 mV	56 mV	250 mV	87%	DCH10024S28	88%	DCH10048S28
1.8 V	35.0 A	2.16-2.88 V	10 mV	10 mV	120 mV	70%	DCH20024S1V8	70%	DCH20048S1V8
2.5 V	35.0 A	3.00 - 4.00 V	10 mV	10 mV	120 mV	76%	DCH20024S2V5	76%	DCH20048S2V5
3.3 V	35.0 A	4.00 - 5.50 V	10 mV	10 mV	200 mV	79%	DCH20024S03	80%	DCH20048S03
5.0 V	30.0 A	5.70 - 7.00 V	10 mV	10 mV	200 mV	82%	DCH20024S05	83%	DCH20048S05
12.0 V	16.7 A	13.80 - 16.80 V	24 mV	24 mV	200 mV	87%	DCH20024S12	88%	DCH20048S12
15.0 V	13.4 A	17.25 - 21.00 V	30 mV	30 mV	200 mV	87%	DCH20024S15	88%	DCH20048S15
24.0 V	8.4 A	27.60 - 33.60 V	48 mV	48 mV	250 mV	87%	DCH20024S24	88%	DCH20048S24
28.0 V	7.2 A	32.20 - 39.20 V	56 mV	56 mV	250 mV	87%	DCH20024S28	88%	DCH20048S28

**Notes**

1. Install an external capacitor  $C_{in}$ , with more than 33  $\mu F$ , between +Vin and -Vin input pins for low line noise and for stable operation  $T_c = -20\text{ }^\circ\text{C}$  to  $+100\text{ }^\circ\text{C}$  electrolytic or,  $T_c = -40\text{ }^\circ\text{C}$  to  $+100\text{ }^\circ\text{C}$  ceramic capacitor. When the line impedance is high or the input voltage rises quickly at start-up ( $<10\text{ }\mu\text{s}$ ), install a capacitor  $C_{in}$  between +Vin and -Vin input pins (within 50 mm from pins).
2. Full application notes available at [www.xpplc.com](http://www.xpplc.com), alternatively contact Technical Sales.

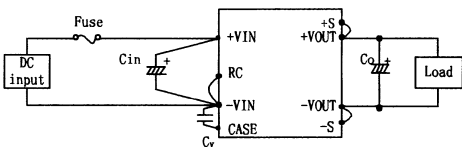
**Mechanical Details**

**Derating**

Use with conduction cooling (e.g. heat radiation by conduction from the aluminium baseplate to the attached heatsink).

**NOTE:**  
Derating curve shown is based on the aluminum baseplate temperature. In the hatched area, the specification of ripple & noise is different from other areas.

**Connection For Standard Use**



In order to use the converters, it is necessary to wire as shown. Short the following pins to turn the power supply on.

-V in  $\longleftrightarrow$  RC, +V out  $\longleftrightarrow$  Sense, -V out  $\longleftrightarrow$  Sense

- $C_{in}$  : External capacitor on the input side  $>33\text{ }\mu F$
- $C_o$  : External capacitor on the output side - See Table
- $C_Y$  : Primary decoupling capacitor -  $>4700\text{ pF}$

Baseplate Temperature : $T_c = -20\text{ }^\circ\text{C}$ to $+100\text{ }^\circ\text{C}$						
VOUT	3.3 V	5 V	12 V	15 V	24 V	28 V
DCH50	2200		470		220	
DCH100	2200		470		220	
DCH200	2200		1000		470	
Baseplate Temperature : $T_c = -40\text{ }^\circ\text{C}$ to $+100\text{ }^\circ\text{C}$						
VOUT	3.3 V	5 V	12 V	15 V	24 V	28 V
DCH50	2200 x 2		470 x 2		220 x 2	
DCH100	2200 x 2		470 x 2		220 x 2	
DCH200	2200 x 2		1000 x 2		470 x 2	

