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*

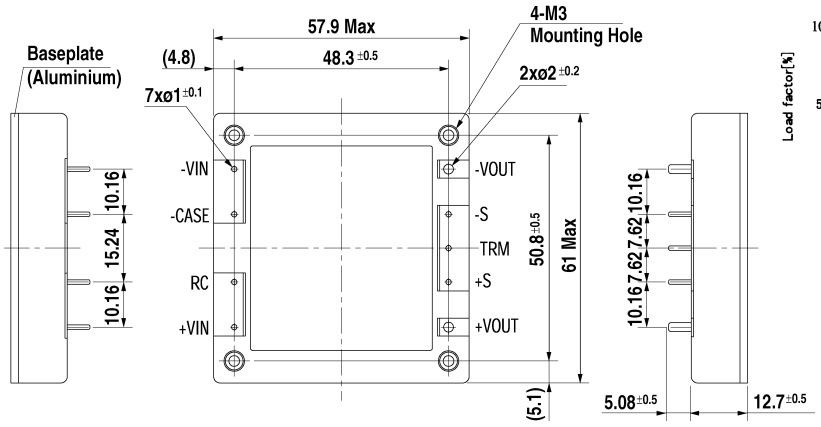
OUTPUT VOLTAGE & CURRENT RATINGS — DCH

Output Voltage	Output Current	OVP Set Point	Regulation Line	Regulation Load	Ripple & Noise Pk-Pk	18-36 VDC IN Efficiency Typ.	18-36 VDC IN Model Number	36-76 VDC IN Efficiency Typ.	36-76 VDC IN 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

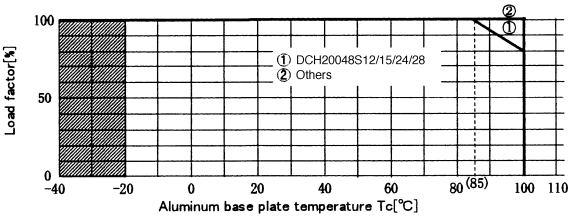
Notes

1. *Install an external capacitor Cin, with more than 33 µF, between +Vin and -Vin input pins for low line noise and for stable operation Tc= -20 °C to +100 °C electrolytic or, Tc= -40 °C to +100 °C ceramic capacitor. When the line impedance is high or the input voltage rises quickly at start-up (<10 µs), install a capacitor Cin between +Vin and -Vin input pins (within 50 mm from pins).*
2. *Full application notes available at www.xpplc.com, alternatively contact Technical Sales.*

Mechanical Details



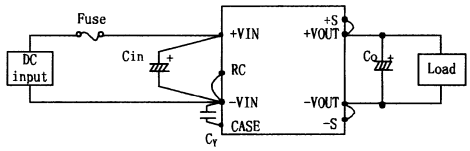
Derating



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 ◄► RC, +V out ◄► Sense, -V out ◄► Sense

C in : External capacitor on the input side >33 µF
Co : External capacitor on the output side - See Table
C_Y : Primary decoupling capacitor - >4700 pF

Baseplate Temperature : Tc = -20 °C to +100 °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 : Tc = -40 °C to +100 °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	