

DCW150



Size: 2.56in x 3.86in x 0.67in (65mm x 98mm x 17mm)

DCWD150



Size: 2.07in x 3.86in x 0.67in (52.5mm x 98mm x 17mm)



OPTIONS

- Negative Logic Remote ON/OFF
- Heatsink

FEATURES

- 200 Watts Maximum Output Power
- 4:1 Wide Input Voltage Range
- High Efficiency up to 89%
- CV+CC Mode
- No Minimum Load Required
- 2250VDC Input to Output Isolation
- Adjustable Output Voltage
- Under-Voltage Lockout
- Top Side and Bottom Side Heat Dissipation
- Six-Sided Continuous Shield
- Built-In EN55011 & EN55022 Class A Filter
- Over Voltage, Over Load, Short Circuit, Over Temperature and Input Reverse Protection
- UL60950-1, EN60950-1, & IEC60950-1 Safety Approvals
- CE Marked
- Compliant to RoHS II & REACH
- Compliance to EN50155 and EN45545-2 Railway Standard

APPLICATIONS

- Railway System
- Wireless Network
- Telecom/Datacom
- Industry Control System
- Distributed Power Architectures
- Semiconductor Equipment
- Battery Charger

DESCRIPTION

The DCW150 and DCWD150 series of DC/DC converters provides up to 200 watts of output power. This series consists of single output models with a wide 4:1 input voltage range. Each model in this series features an adjustable output voltage, constant current mode output limit, and 2250VDC input to output isolation. The models are also protected against over voltage, over load, short circuit, over temperature, and input reverse conditions and are compliant to both RoHS II and REACH. The DCW150 and DCWD150 series are CE marked and have UL60950-1, EN60950-1 and IEC60950-1 safety approvals. Please contact factory for order details.

MODEL SELECTION TABLE

Model Number	Input Voltage Range	Output Voltage	Output Current ⁽¹⁾	Ripple & Noise	No Load Input Current	Maximum Capacitive Load	Efficiency
DCW24S12-150 DCWD24S12-150	24VDC (9~36VDC)	12VDC	12.5A	100mVp-p	70mA	40000µF	86%
DCW24S15-150 DCWD24S15-150		15VDC	10A	100mVp-p	80mA	26000µF	86%
DCW24S24-150 DCWD24S24-150		24VDC	6.3A	200mVp-p	95mA	10000µF	87%
DCW24S28-150 DCWD24S28-150		28VDC	5.4A	200mVp-p	120mA	7600µF	87%
DCW24S48-150 DCWD24S48-150		48VDC	3.2A	350mVp-p	130mA	2600µF	86%
DCW48S12-150 DCWD48S12-150		48VDC (18~75VDC)	12VDC	12.5A	100mVp-p	50mA	40000µF
DCW48S15-150 DCWD48S15-150	15VDC		10A	100mVp-p	60mA	26000µF	89%
DCW48S24-150 DCWD48S24-150	24VDC		6.3A	200mVp-p	60mA	10000µF	89%
DCW48S28-150 DCWD48S28-150	28VDC		5.4A	200mVp-p	70mA	7600µF	89%
DCW48S48-150 DCWD48S48-150	48VDC		3.2A	350mVp-p	70mA	26000µF	88%
DCW110S12-150 DCWD110S12-150	110VDC (43~160VDC)		12VDC	12.5A	100mVp-p	25mA	40000µF
DCW110S15-150 DCWD110S15-150		15VDC	10A	100mVp-p	25mA	26000µF	89%
DCW110S24-150 DCWD110S24-150		24VDC	6.3A	200mVp-p	25mA	10000µF	89%
DCW110S28-150 DCWD110S28-150		28VDC	5.4A	200mVp-p	25mA	7600µF	89%
DCW110S48-150 DCWD110S48-150		48VDC	3.2A	350mVp-p	35mA	2600µF	88%

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
INPUT SPECIFICATIONS					
Input Voltage Range	24Vin (Nominal)	9	24	36	VDC
	48Vin (Nominal)	18	48	75	
	110Vin (Nominal)	43	110	160	
Start-Up Voltage	24Vin (Nominal)			9	VDC
	48Vin (Nominal)			18	
	110Vin (Nominal)			43	
Shutdown Voltage	24Vin (Nominal)	7.9		8.5	VDC
	48Vin (Nominal)	15.6		16.8	
	110Vin (Nominal)	33.0		36.0	
Input Surge Voltage	1 second, max.	24Vin (Nominal)		50	VDC
		48Vin (Nominal)		100	
		110Vin (Nominal)		185	
Input Filter		Pi Type			
OUTPUT SPECIFICATIONS					
Output Voltage		See Table			
Voltage Accuracy		-1.0		+1.0	%
Line Regulation	Low Line to High Line at Full Load	-0.2		+0.2	%
Load Regulation	No Load to Full Load	-0.4		+0.4	%
Voltage Adjustability	Use a resistor across on the Trim1 and Trim2 to adjust the output voltage			+20	%
Output Power				200	W
Output Current		See Table			
Maximum Capacitive Load		See Table			
Ripple & Noise (20MHz bandwidth)	12V, 15V		100		mVp-p
	24V, 28V		200		
	48V		350		
Transient Response Recovery Time	25% Load Step Change		200		µS
Start-Up Time	Constant Resistive Load	Power Up	35		ms
		Remote ON/OFF	35		
Temperature Coefficient		-0.02		+0.02	%/°C
REMOTE ON/OFF CONTROL⁽²⁾					
Positive Logic (Standard)	DC-DC ON	Open or 3~12VDC			
	DC-DC OFF	Short or 0~1.2VDC			
Negative Logic (Option)	DC-DC ON	Short or 0~1.2VDC			
	DC-DC OFF	Open or 3~12VDC			
Input Current of CTRL Pin		-0.5		1	mA
Remote OFF Input Current			3.5		mA
PROTECTION					
Short Circuit Protection		Continuous, Automatic Recovery			
Over Load Protection	% of Iout rated, CC Mode ⁽³⁾	105		120	%
Over Voltage Protection	% of Vout (nominal); Hiccup	125		140	%
Over Temperature Protection			+110		°C
ENVIRONMENTAL SPECIFICATIONS					
Operating Case Temperature		-40		+100	°C
Maximum Case Temperature			+100		°C
Storage Temperature Range		-55		+125	°C
Relative Humidity		5		95	%RH
Thermal Shock		MIL-STD-810F			
Shock		EN61373, MIL-STF-810F			
Vibration		EN61373, MIL-STD-810F			
Thermal Impedance ⁽⁴⁾	Vertical direction by natural convection (20LFM) Only mount on the iron base-plate Mount on the iron base-plate and top side with 7G-0058A heat-sink		2.55		°C/W
			2.0		
MTBF	MIL-HDBK-217, Full Load		495,400		Hours

SPECIFICATIONS

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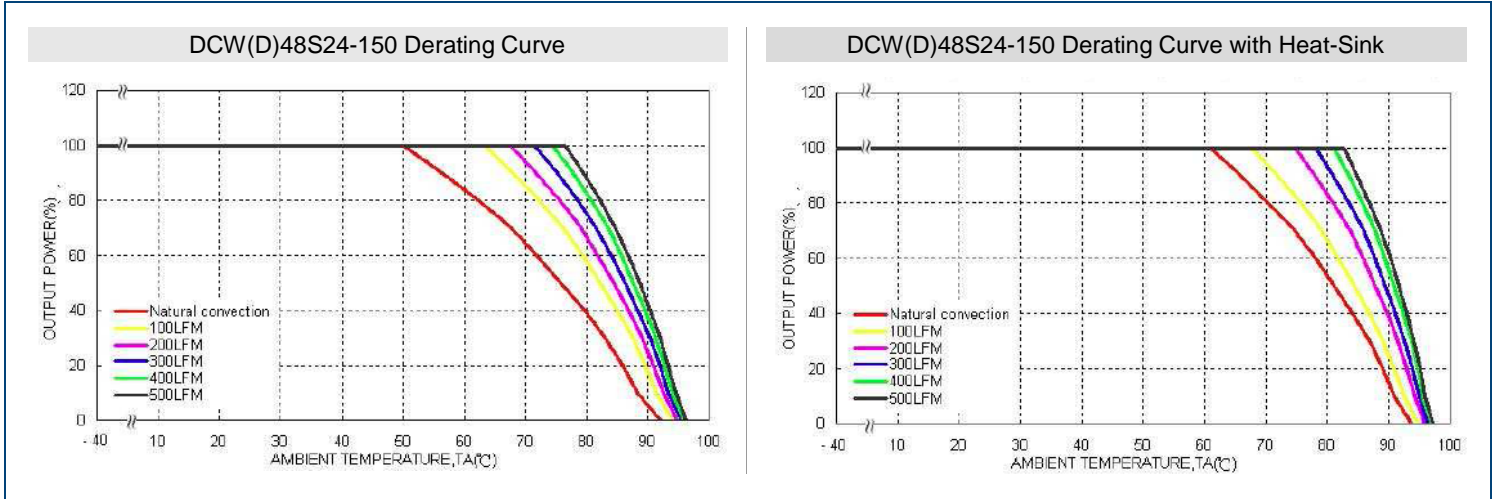
SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
GENERAL SPECIFICATIONS						
Efficiency			See Table			
Switching Frequency	24VDC Input	48Vout	248	275	303	kHz
		Others	270	300	330	
	48VDC Input	48Vout	248	275	303	
		Others	270	300	330	
	110VDC Input	All	203	225	248	
Isolation Voltage	1 minute	Input to Output	2250			VDC
		Input to Case	1600			
		Output to Case	1600			
Isolation Resistance	500VDC		1			GΩ
Isolation Capacitance					3500	pF
PHYSICAL SPECIFICATIONS						
Weight	DCW150			7.94oz (225g)		
	DCWD150			7.76oz (220g)		
Dimensions (L x W x H)	DCW150			2.56in x 3.86in x 0.67in (65mm x 98mm x 17mm)		
	DCWD150			2.07in x 3.86in x 0.67in (52.5mm x 98mm x 17mm)		
Case Material			Aluminum			
Base Material			Aluminum			
Potting Material			Silicone (UL94 V-0)			
Shielding			Six-Sided, Continuous			
SAFETY & EMC CHARACTERISTICS						
Safety Approvals			UL60950-1 EN60950-1 IEC6095-1			
EMI ⁽⁵⁾	EN5501, EN55022			DC-DC Module	Class A	
ESD	EN61000-4-2	Air ±8kV and Contact ±6kV		Perf. Criteria A		
Radiated Immunity	EN61000-4-3	10 V/m		Perf. Criteria A		
Fast Transient ⁽⁶⁾	EN61000-4-4	±2kV		Perf. Criteria A		
Surge ⁽⁶⁾	EN61000-4-5	EN55024 ±1kV and EN50155 ±2kV		Perf. Criteria A		
Conducted Immunity	EN61000-4-6	10 Vr.m.s		Perf. Criteria A		
Power Frequency Magnetic Field	EN61000-4-8	100A/m continuous; 1000A/m 1 second		Perf. Criteria A		

NOTES

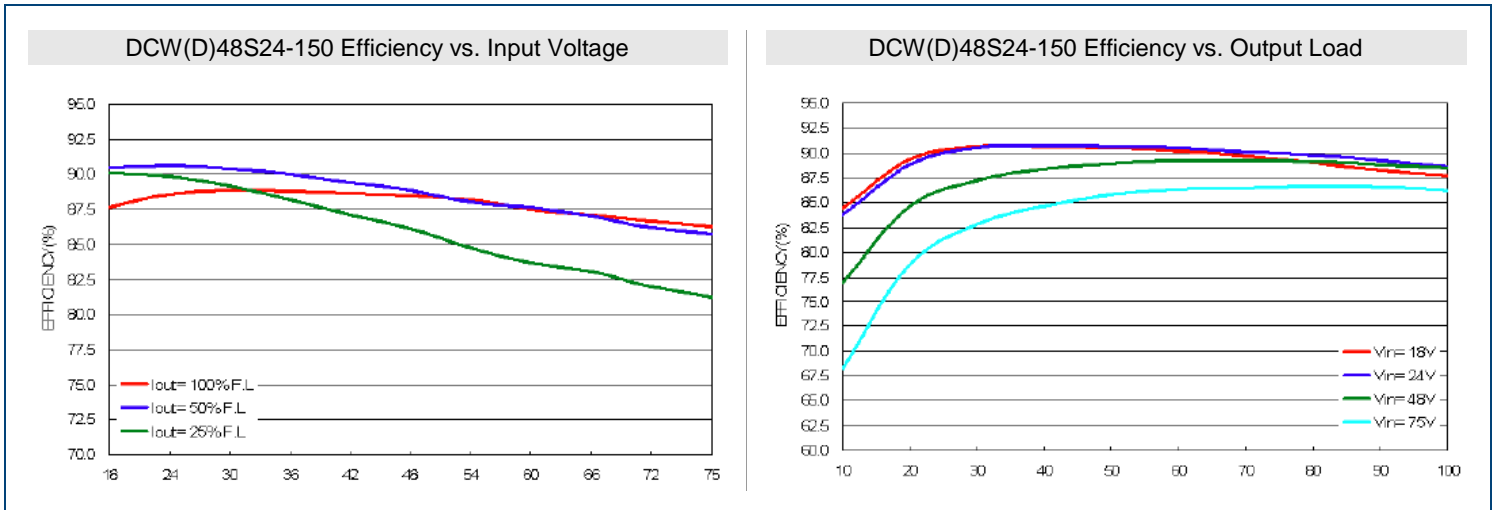
- (1) Measured at Full Load.
- (2) The remote ON/OFF control pin voltage is referenced to -Vin. The negative logic is optional.
- (3) The CC mode is Constant Current Mode and is tested at nominal input voltage.
- (4) 1. The iron base-plate dimension is 19" x 3.5" x 0.063" (The height is EIA standard 2U)
2. The heat-sink is optional and P/N is 7G-0058A-F
- (5) The standard module meets EMI Class A without external components.
- (6) An external input filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5. We suggest the following:
DCW(D)150-24Sxx: Nippon chemi-con KY series, 470µF/50V
DCW(D)150-48Sxx: Nippon chemi-con KY series, 220µF/100V
DCW(D)150-110Sxx: Nippon chemi-con KY series, 150µF/200V

CAUTION: This power module is not internally fused; an input line fuse must always be used. If the load has sourcing capability (ex. Battery or super capacitor), an output line fuse must always be used.

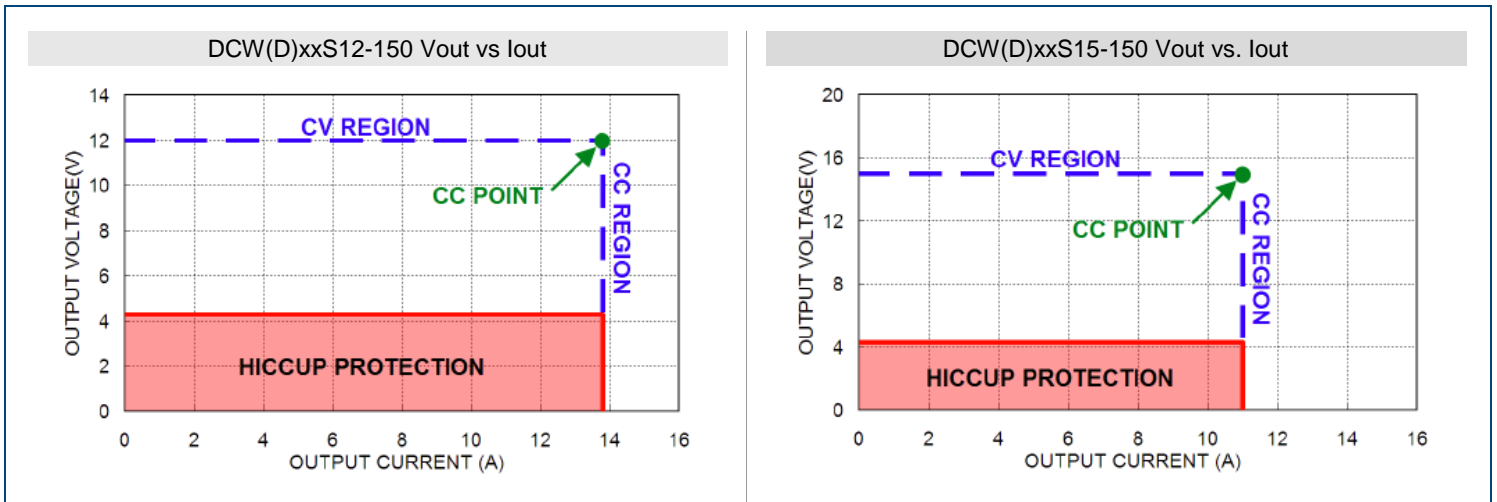
DERATING CURVES

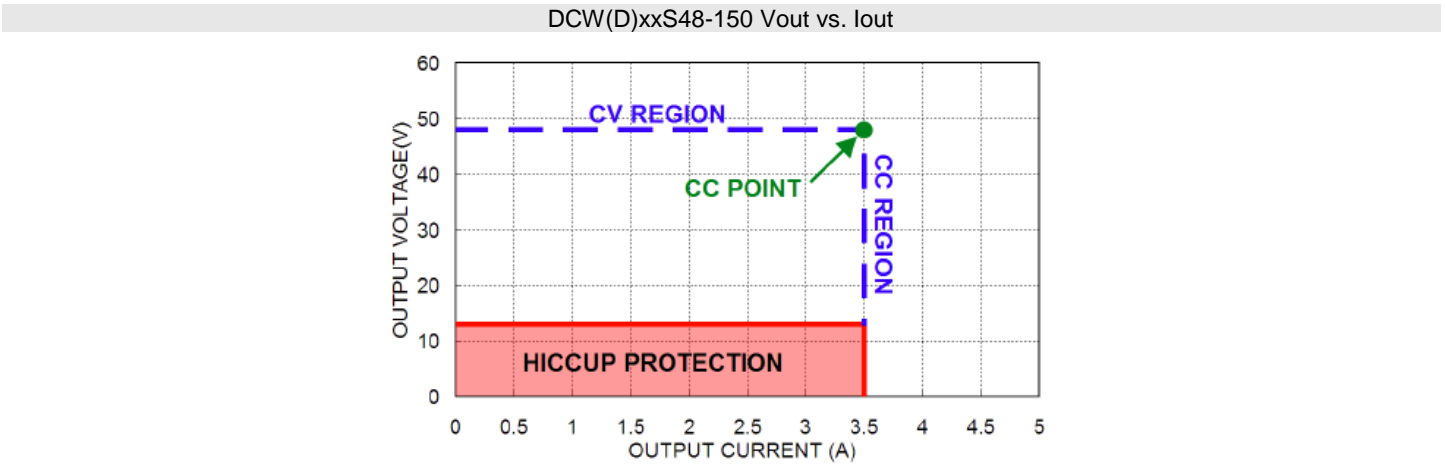
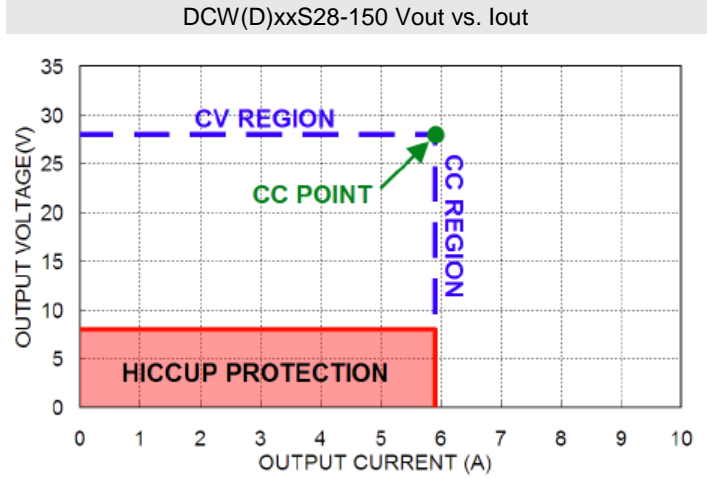
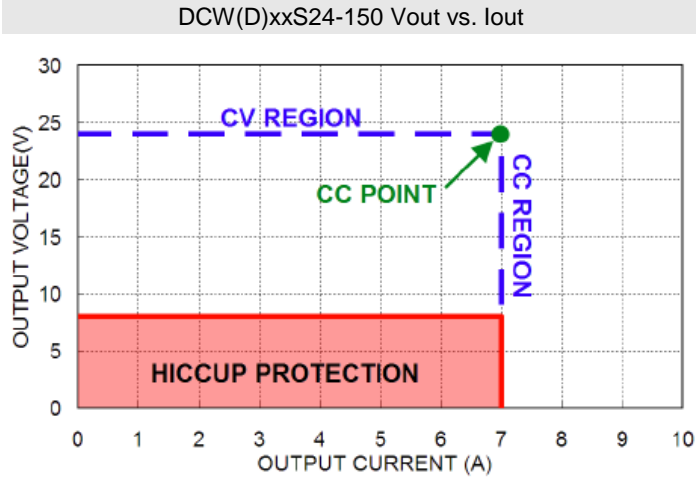


EFFICIENCY GRAPHS



CHARACTERISTIC CURVE

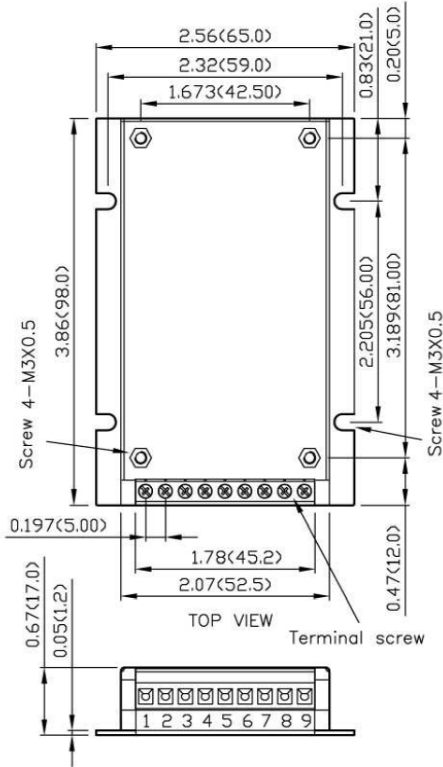




MODE	DESCRIPTION	CONDITION
CV Region	In normal operation. The output current in data sheet	Resistance Load > Vout/Iout (CC Point)
CC Region	If the output load current are over rating, the output current will keep in a constant value and output voltage will fall	Resistance Load < Vout/Iout (CC Point)
Hiccup Protection	If the output resistance becomes short, it will operate in hiccup protection	DCW(D)xxS12-150, DCW(D)xxS15-150: Vout < 4.3V (typ.) to Output Short DCW(D)xxS24-150, DCW(D)xxS28-150: Vout < 8.0V (typ.) to Output Short DCW(D)xxS48-150: Vout < 13V (typ.) to Output Short

MECHANICAL DRAWINGS

DCW150 Mechanical Drawing

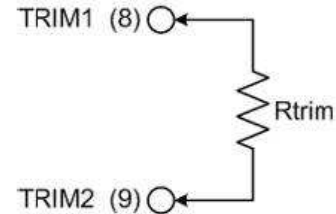


TERMINAL CONNECTION

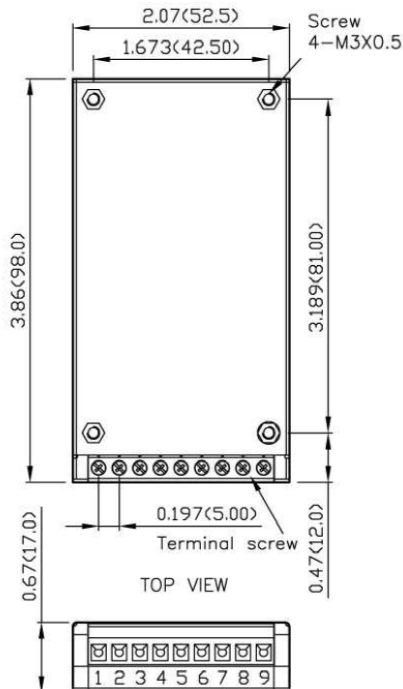
PIN	DEFINE	WIRE GAUGE RECOMMENDATIONS
1	+Vin	14~16AWG
2	+Vin	14~16AWG
3	-Vin	14~16AWG
4	-Vin	14~16AWG
5	Ctrl	14~24AWG
6	+Vout	14~16AWG
7	-Vout	14~16AWG
8	Trim 1	14~24AWG
9	Trim 2	14~24AWG

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below



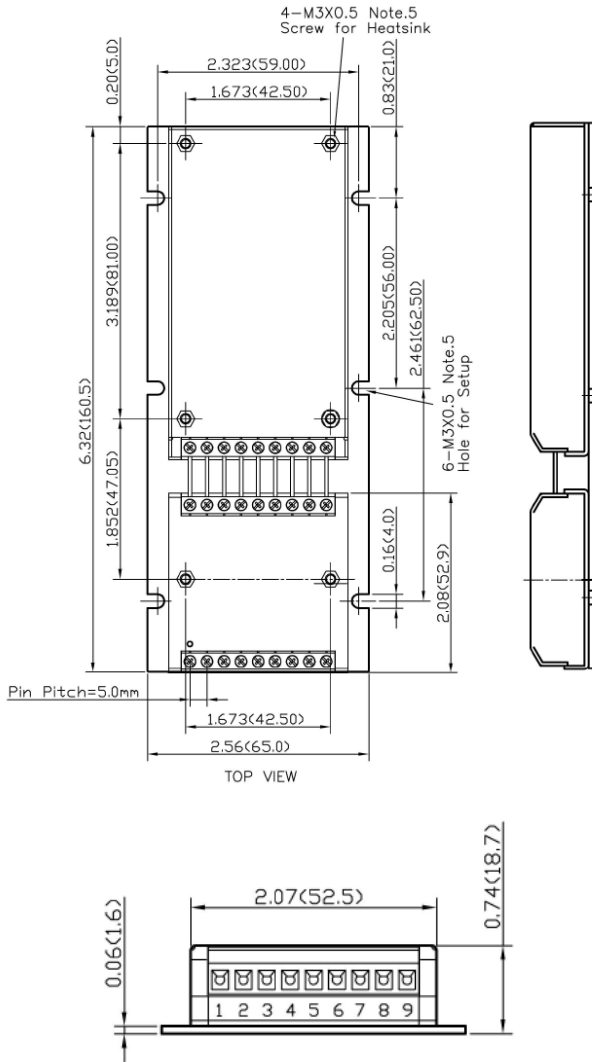
DCWD150 Mechanical Drawing



Notes:

1. All dimensions in inch (mm)
2. Tolerance: $x.xx \pm 0.02$ ($x.xx \pm 0.5$)
 $x.xxx \pm 0.01$ ($x.xx \pm 0.25$)
3. Pole pitch tolerance ± 0.01 (0.25)
4. Screw locked torque: MAX 5.0kgf-cm (0.49N-m)
5. Terminal screw locked torque: MAX 2.5kgf-cm(0.25N-m)

With EMI Filter Module

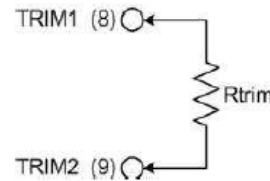


TERMINAL CONNECTION

PIN	DEFINE	WIRE GAUGE RECOMMENDATIONS
1	+Vin	14~16AWG
2	+Vin	14~16AWG
3	-Vin	14~16AWG
4	-Vin	14~16AWG
5	Ctrl	14~24AWG
6	+Vout	14~16AWG
7	-Vout	14~16AWG
8	Trim 1	14~24AWG
9	Trim 2	14~24AWG

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.

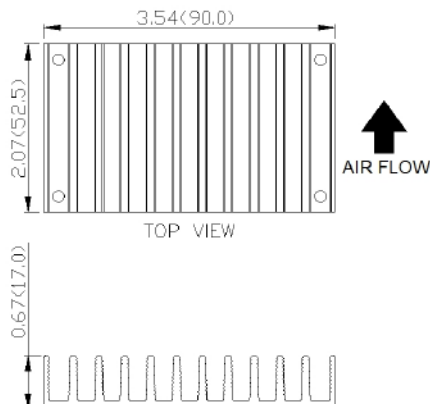


Notes:

1. All dimensions in inch (mm)
2. Tolerance: $x.xx \pm 0.02$ ($x.x \pm 0.5$)
 $x.xxx \pm 0.01$ ($x.xx \pm 0.25$)
3. Pole pitch tolerance ± 0.01 (0.25)
4. Screw locked torque: MAX 5.0kgf-cm(0.49N-m)
5. Terminal screw locked torque: MAX 2.5kgf-cm(0.25N-m)

HEATSINK OPTIONS

Heat-sink Part No: 7G-0058A-F, Suffix: -HC



Notes:

1. All dimensions in inch (mm)
2. Tolerance: $x.xx \pm 0.02$ ($x.x \pm 0.5$)
 $x.xxx \pm 0.01$ ($x.xx \pm 0.25$)

MODEL NUMBER SETUP

DCW(D)	48	S	24	-	150	N	F ⁽¹⁾	HC
Series Name	Input Voltage	Output Quantity	Output Voltage		Output Power	Remote Control Option	Filter Option	Assembly Option
	24: 9~36VDC 48: 18~75VDC 110: 43~160VDC	S: Single	12: 12VDC 15: 15VDC 24: 24VDC 28: 28VDC 48: 48VDC			None: Positive Logic N: Negative Logic	None: NC F: EMI Filter Module	None: None HC: H=0.670" Horizontal, 7G-0058A-F

Notes:

1. EMI filter meets EN55022 Class B
 This EMI filter is used for DCWD-24Sxx-150 and DCWD-48Sxx-150 only, not for other items. (Ex: DCWD-24S24-150-F)

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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