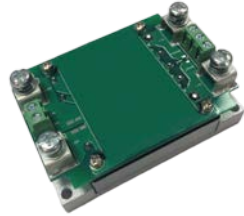


Standards Models



Size: 2.40 x 2.28 x 0.50 inches

Terminal Block Models ("T" suffix)



Size: 3.35 x 2.40 x 1.27 inches

Terminal Block w/ EMC Filter ("TF" suffix)



Size: 3.35 x 2.40 x 1.47 inches

Terminal Block w/ EMC Filter ("TF1" suffix)



Size: 3.35 x 2.40 x 1.53 inches

**OPTIONS**

- Pin Length
- Sync Pin
- Case Pin
- Heatsinks
- Thru-Hole Inserts
- Negative Logic Remote On/Off
- Terminal Block
- Terminal Block with Aluminum Base-plate and EMC Filter
- Terminal Block with Anodized Aluminum Base-plate and EMC Filter, can be Connected to PE

**FEATURES**

- Soft-Start
- 2:1 Wide Input Voltage Ranges
- 165~255 Watts Output Power
- No Minimum Load Requirements
- Adjustable Output Voltage
- Remote On/Off Control
- Industry Standard Half-Brick Footprint
- High Efficiency up to 93%
- Six-Sided Shielding
- Single Outputs Ranging from 3.3VDC to 53VDC
- Input to Output Basic Insulation: 2250VDC
- Threaded Inserts and Thru-Hole Inserts Available
- Short Circuit, Over Voltage, Over Current, & Over Temp. Protection
- -40°C to +115°C Operating Case Temperature
- Compliant to RoHS EU Directive 2011/65/EU
- CE Mark Meets 2006/95/EC, 2011/95/EC, and 2004/108/EC
- UL60950-1, EN60950-1, & IEC60950-1 Safety Approvals
- Several Mechanical Options Available

**APPLICATIONS**

- Wireless Networks
- Measurement Equipment
- Telecom / Datacom
- Industry Control Systems
- Distributed Power Architectures
- Semiconductor Equipment
- Military Applications

**DESCRIPTION**

The DCHB200 series of DC/DC power converters provides up to 255 Watts of output power in an industry standard half-brick package and footprint. This series consists of single output models ranging from 3.3VDC to 53VDC with 2:1 wide input voltage ranges. Some features include high efficiency up to 93%, adjustable output voltage, and remote on/off control. These converters also have short circuit, over voltage, over current, and over temperature protection. The DCHB200 series is RoHS compliant and has UL60950-1, EN60950-1, and IEC60950-1 safety approvals. Several different options are available for this series including negative remote on/off control, terminal block, pin length, heatsinks, sync pin, case pin, and thru-hole inserts.

**MODEL SELECTION TABLE**

Model Number	Input Voltage	Output Voltage	Output Current		No Load <sup>(2)</sup> Input Current	Ripple & Noise <sup>(3)(4)</sup>	Output Power	Maximum Capacitive Load <sup>(5)</sup>	Efficiency <sup>(3)</sup>	
			Min. load	Full load						
DCHB200-12S3.3	12 VDC (9 - 22 VDC)	3.3 VDC	0mA	50A	25mA	75mVp-p	165W	151000µF	87%	
DCHB200-12S05		5 VDC	0mA	36A	90mA	75mVp-p	180W	72000µF	90%	
DCHB200-12S12	12 VDC (8.5 - 22 VDC)	12 VDC	0mA	15A	90mA	100mVp-p	180W	12500µF	90%	
DCHB200-12S15		15 VDC	0mA	12A	55mA	100mVp-p	180W	8000µF	90%	
DCHB200-12S24		24 VDC	0mA	7.5A	70mA	200mVp-p	180W	3100µF	90%	
DCHB200-12S28		28 VDC	0mA	6.5A	55mA	200mVp-p	182W	2300µF	90%	
DCHB200-12S48		48 VDC	0mA	3.7A	75mA	300mVp-p	177.6W	770µF	89%	
DCHB200-24S3.3		24 VDC (16.5 - 36 VDC)	3.3 VDC	0mA	50A	20mA	75mVp-p	165W	151000µF	88%
DCHB200-24S05	5 VDC		0mA	40A	35mA	75mVp-p	200W	80000µF	91%	
DCHB200-24S12	12 VDC		0mA	18A	45mA	100mVp-p	216W	15000µF	91%	
DCHB200-24S15	15 VDC		0mA	15A	45mA	100mVp-p	225W	10000µF	91%	
DCHB200-24S24	24 VDC		0mA	9A	40mA	200mVp-p	216W	3700µF	93%	
DCHB200-24S28	28 VDC		0mA	7.5A	50mA	200mVp-p	210W	2600µF	93%	
DCHB200-24S48	48 VDC		0mA	4.5A	50mA	300mVp-p	216W	930µF	91%	
DCHB200-48S3.3	48 VDC (33 - 75 VDC)		3.3 VDC	0mA	60A	20mA	75mVp-p	198W	181000µF	90%
DCHB200-48S05		5 VDC	0mA	46A	20mA	75mVp-p	230W	92000µF	91%	
DCHB200-48S12		12 VDC	0mA	21A	25mA	100mVp-p	252W	17500µF	91%	
DCHB200-48S15		15 VDC	0mA	17A	25mA	100mVp-p	255W	11300µF	93%	
DCHB200-48S24		24 VDC	0mA	10.5A	25mA	200mVp-p	252W	4300µF	92%	
DCHB200-48S28		28 VDC	0mA	9A	25mA	200mVp-p	252W	3200µF	92%	
DCHB200-48S48		48 VDC	0mA	5.2A	25mA	300mVp-p	249.6W	1000µF	92%	
DCHB200-48S53		53 VDC	0mA	4.7A	25mA	25mA	300mVp-p	249.1W	880µF	92%

**SPECIFICATIONS: DCHB200 SERIES**

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
<b>INPUT SPECIFICATIONS</b>						
Input Voltage Range	12VDC nominal input models	3.3Vout & 5Vout models	9	12	22	VDC
		Other models	8.5	12	22	
	24VDC nominal input models	16.5	24	36		
	48VDC nominal input models	33	48	75		
Start-Up Voltage	12VDC nominal input models				9	VDC
	24VDC nominal input models				18	
	48VDC nominal input models				34	
Shutdown Voltage	12VDC nominal input models		7.3		8.1	VDC
	24VDC nominal input models		15.5		16.3	
	48VDC nominal input models		31.6		32.5	
Input Surge Voltage (1sec, max.)	12VDC nominal input models				30	VDC
	24VDC nominal input models				50	
	48VDC nominal input models				100	
Input Current	No Load		See Table			
Input Filter (See Note 1)					Pi type	
Sync Pin Signal (See Note 2)			-0.3		5.6	VDC
<b>OUTPUT SPECIFICATIONS</b>						
Output Voltage			See Table			
Voltage Accuracy			-1.0		+1.0	%
Line Regulation	Low line to high line at full load		-0.1		+0.1	%
Load Regulation	No load to full load		-0.1		+0.1	%
Voltage Adjustability	Maximum output deviation is inclusive of remote sense		-20		+10	%
Remote Sense (See Note 3)	% of nominal Vout				10	%
Output Power					See Table	
Output Current					See Table	
Minimum Load			0			%
Maximum Capacitive Load	Minimum input and constant resistive load		See Table			
Ripple & Noise (20MHz bandwidth)	With a 1µF/25V X7R MLCC and a 22µF/25V POS-CAP	3.3Vout & 5Vout		75		mVp-p
		12Vout & 15Vout		100		
	With a 1µF/25V X7R MLCC and a 22µF/25V POS-CAP	24Vout & 28Vout		200		
	With a 4.7µF/50V X7R MLCC With a 2.2µF/100V X7R MLCC	48Vout & 53Vout		300		
Transient Response Recovery Time	25% load step change			200	250	µs
Start-Up Time	Constant resistive load	Power Up		75		ms
		Remote On/Off		75		
Temperature Coefficient			-0.02		+0.02	%/°C
<b>REMOTE ON/OFF CONTROL</b>						
Positive Logic (standard)	Referenced to -Input pin	DC/DC ON	Open or 3~12 VDC			
		DC/DC OFF	Short or 0~1.2VDC			
Negative Logic (optional)	Referenced to -Input pin	DC/DC ON	Short or 0~1.2VDC			
		DC/DC OFF	Open or 3~12 VDC			
Input Current of CTRL Pin			-0.5		1	mA
Remote OFF Input Current				3		mA
<b>PROTECTION</b>						
Short Circuit Protection			Continuous, automatic recovery			
Over Load Protection	% of rated Iout; hiccup mode		120		150	%
Over Voltage Protection	% of nominal Vout; hiccup mode		115		130	%
Over Temperature Protection				+120		°C
<b>ENVIRONMENTAL SPECIFICATIONS</b>						
Operating Case Temperature	Base-plate		-40		+115	°C
Storage Temperature	Terminal block types		-40		+105	°C
	Others		-55		+125	
Thermal Impedance (See Note 4)	Vertical direction and natural convection (20LFM)	Module without assembly option		6.1		°C/W
		Only mounted on iron base-plate		2.8		
		0.24" height heatsink		5.1		
		0.45" height heatsink		4.6		
Relative Humidity			5		95	% RH
Thermal Shock					MIL-STD-810F	
Vibration					MIL-STD-810F	
MTBF	MIL-HDBK-217F, full load		318,200			hours

**SPECIFICATIONS: DCHB200 SERIES**

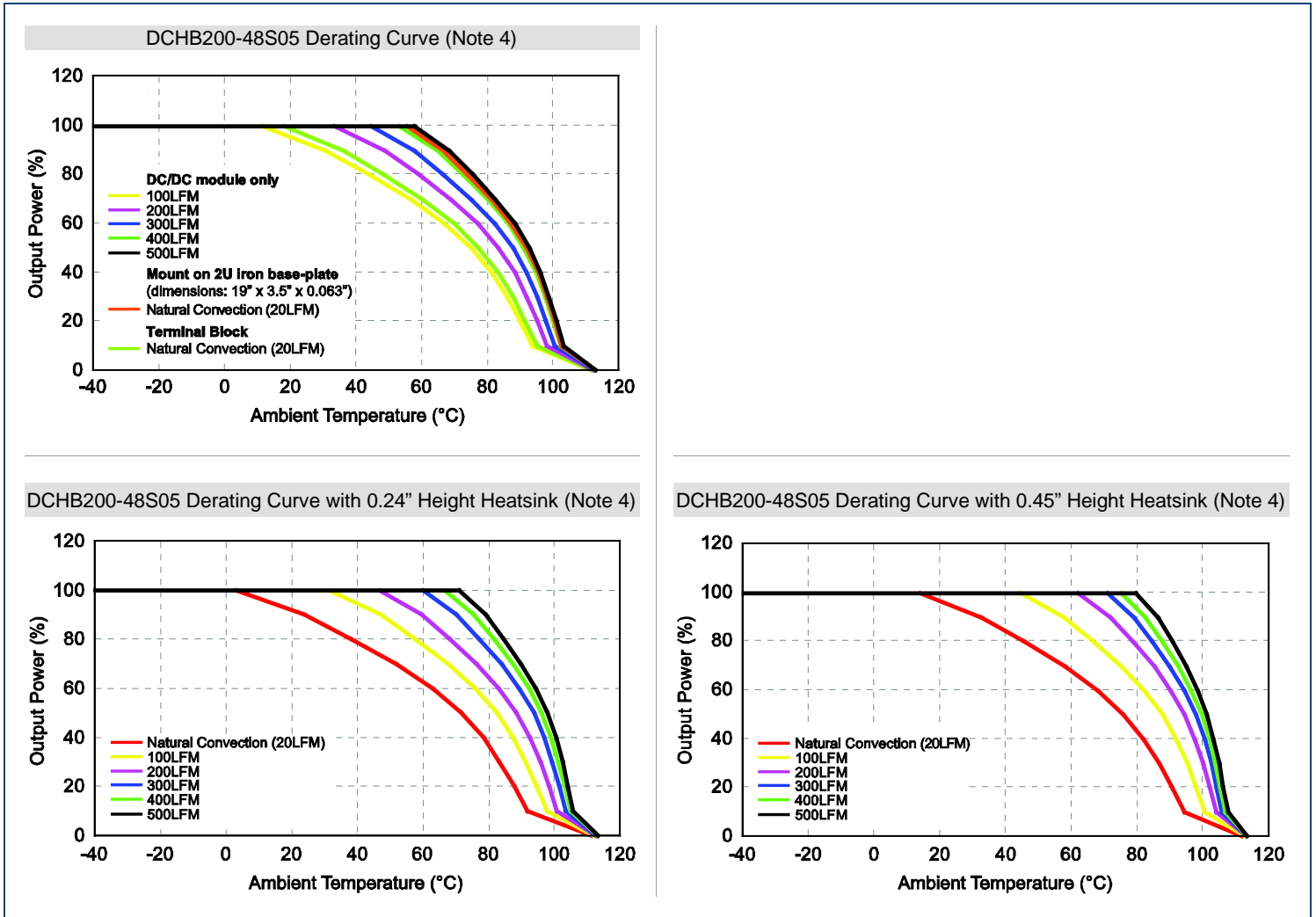
All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.  
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
<b>GENERAL SPECIFICATIONS</b>						
Efficiency	Nominal input voltage and full load		See Table			
Switching Frequency			225	250	275	kHz
Isolation Voltage	1 minute (basic insulation)	Input to Output	2250			VDC
		Input to Case	1600			
		Output to Case	1600			
Isolation Resistance	500VDC		1			GΩ
Isolation Capacitance					2500	pF
<b>PHYSICAL SPECIFICATIONS</b>						
Weight	Standard models		3.70oz (105g)			
	"T" suffix models		8.29oz (235g)			
	"TF" suffix models		9.88oz (280g)			
	"TF1" suffix models		10.12oz (287g)			
Dimensions (L x W x H)	Standard models		2.40 x 2.28 x 0.50 inches (61.0 x 57.9 x 12.7 mm)			
	"T" suffix models		3.35 x 2.40 x 1.27 inches (85.0 x 61.0 x 32.3 mm)			
	"TF" suffix models		3.35 x 2.40 x 1.47 inches (85.0 x 61.0 x 37.3 mm)			
	"TF1" suffix models		3.35 x 2.40 x 1.53 inches (85.0 x 61.0 x 38.8 mm)			
Case Material			Metal			
Base Material			FR4 PCB			
Potting Material			Silicon (UL94-V0)			
Shielding			Six-sided			
<b>SAFETY &amp; EMC CHARACTERISTICS</b>						
Safety Approvals			IEC60950-1, UL60950-1, EN60950-1			
EMI (See Note 5)	EN55022			Class A Class B		
ESD	EN61000-4-2	Air ±8kV and Contact ±6kV		Perf. Criteria A		
Radiated Immunity	EN61000-4-3	20 V/m		Perf. Criteria A		
Fast Transient (See Note 6)	EN61000-4-4	±2kV		Perf. Criteria A		
Surge (See Note 6)	EN61000-4-5	EN55024 ±2kV		Perf. Criteria A		
Conducted Immunity	EN61000-4-6	10 Vrms		Perf. Criteria A		

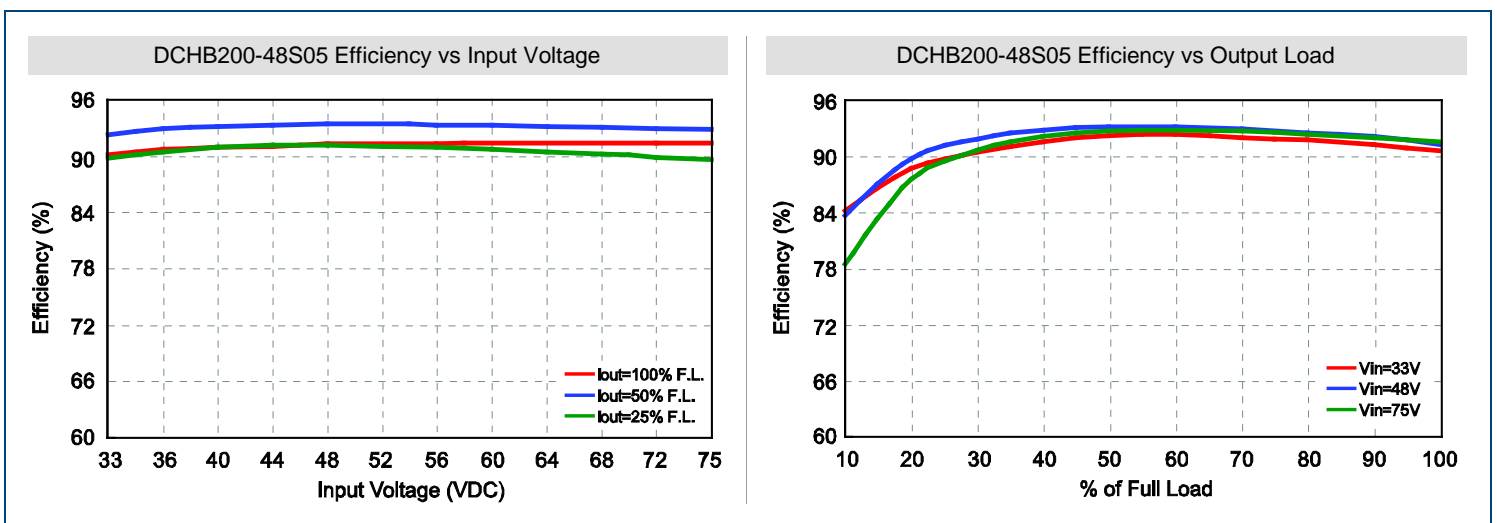
**NOTES**

- Input Source Impedance: These converters will operate under all listed specifications without external components assuming that the source voltage has very low impedance and reasonable input voltage regulation. Highly inductive source impedances can affect the stability of the converter. Since real world voltage sources have finite impedance, performance can be improved by adding an external filter capacitor. We recommend Nippon chemi-con KY series, 100µF/100V.
  - (1) Multiple DCHB200 series modules can be synchronized together simply by connecting the module SYNC pins together. Care should be taken to ensure the ground potential differences between the modules are minimized.
    - In this configuration all of the modules will be synchronized to the highest frequency module.
    - Up to three modules can be synchronized using this technique.
    - More relevant information in the application notes.
  - Maximum output deviation is +10% inclusive of remote sense and trim. If remote sense is not being used the +SENSE should be connected to its corresponding +OUTPUT and likewise the -SENSE should be connected to its corresponding -OUTPUT.
  - (1) Thermal test conditions for vertical direction are by natural convection (20LFM).
    - The iron base-plate dimensions are 19" x 3.5" x 0.063" (the height is EIA standard 2U).
    - Heat sink is optional. See the "Model Number Setup" table on page 7 for suffix options.
  - The DCHB200 standard models (without assembly options) can only meet EN55022 Class A or Class B with external components added.
  - An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. We recommend connecting two aluminum electrolytic capacitors (Nippon chemi-con KY series, 220µF/100V) in parallel.
  - Output voltage is adjustable for 10% trim up or -20% trim down of nominal output voltage by connecting a single resistor between TRIM and +SENSE pins for trim up or between TRIM and -SENSE pins for trim down. To calculate the value of the resistor R<sub>U</sub> and R<sub>D</sub> for a particular output voltage see page 7.
  - CASE GROUNDING: EMI can be reduced when you connect the four screw bolts to the shield plane.
  - This series comes with several different options: negative remote on/off control, heatsinks, case pin, sync pin, pin length, terminal block, and thru-hole inserts. See the "Model Number Setup" table on page 7 for more ordering information.
- CAUTION:** This power converter is not internally fused. An input line fuse must always be used.

**DERATING CURVES**

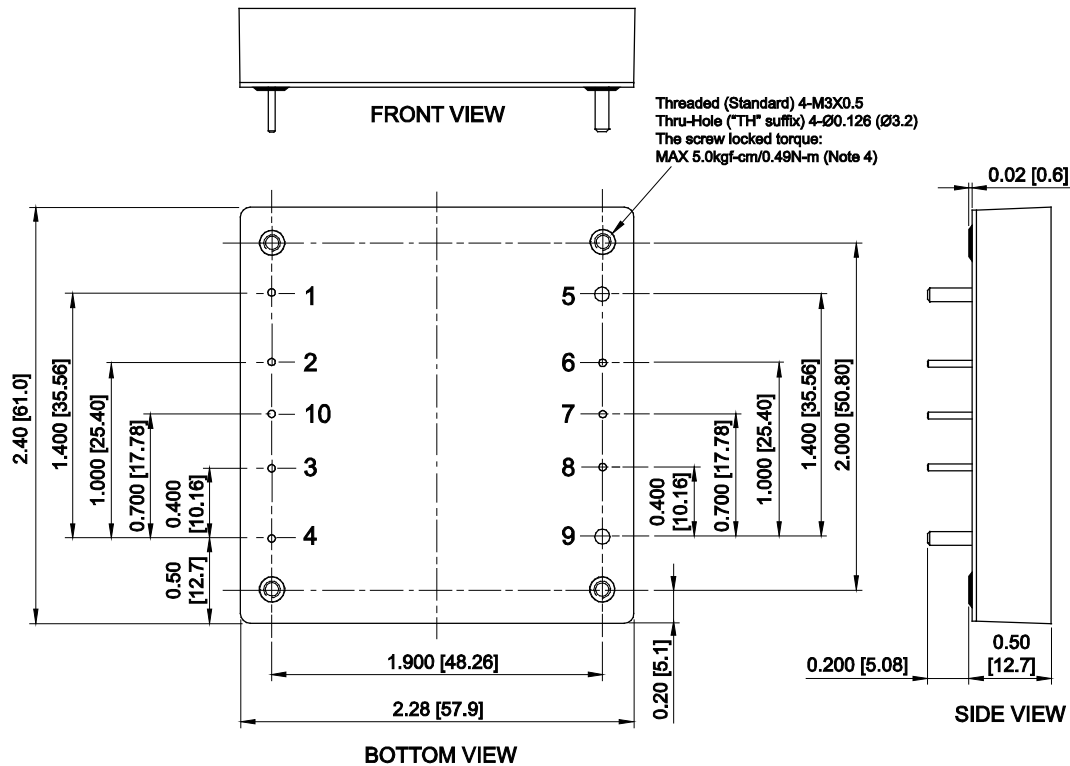


**EFFICIENCY GRAPHS**

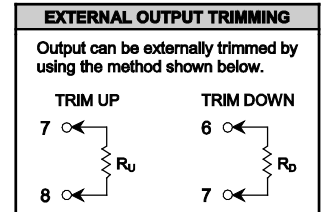


MECHANICAL DRAWING

Standard Models



PIN CONNECTIONS		
Pin	Define	Diameter
1	- INPUT	0.04 in.
2	CASE (optional)	0.04 in.
3	CTRL	0.04 in.
4	+ INPUT	0.04 in.
5	- OUTPUT	0.08 in.
6	- SENSE	0.04 in.
7	TRIM	0.04 in.
8	+ SENSE	0.04 in.
9	+ OUTPUT	0.08 in.
10	SYNC (optional)	0.04 in.



**UNLESS OTHERWISE SPECIFIED**  
ALL DIMENSIONS ARE IN INCHES  
[XX] ARE IN MILLIMETERS  
APPLIED TOLERANCES:  
ANGLES = ±1°  
XX = ±.02 [0.5] XXX = ±.010 [0.25]  
**DO NOT SCALE DRAWING**  
INTERPRET DIMENSION AND TOLERANCE  
PER ASME Y14.5M - 1994

**THIRD ANGLE PROJECTION**

- NOTES:
- TOLERANCE: X.XX±0.02 [X.X±0.5]  
X.XXX±0.010 [X.XX±0.25]
  - PIN PITCH TOLERANCE: ±0.01 [±0.25].
  - PIN DIMENSION TOLERANCE: ±0.004 [±0.1]
  - CASE GROUNDING: EMI CAN BE REDUCED WHEN THE FOUR SCREW BOLTS ARE CONNECTED TO THE SHIELD PLANE
  - DIMENSIONS ARE FOR REFERENCE ONLY

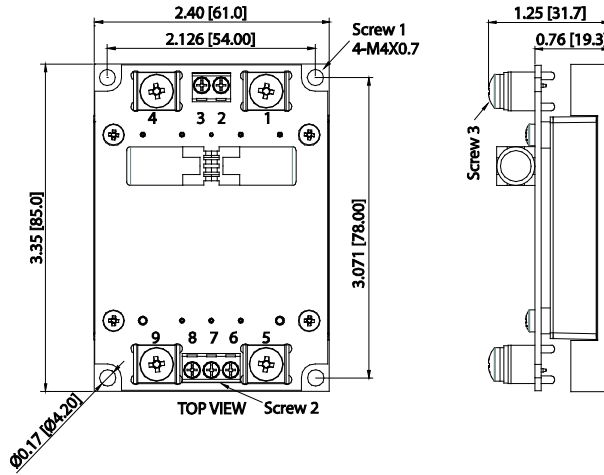
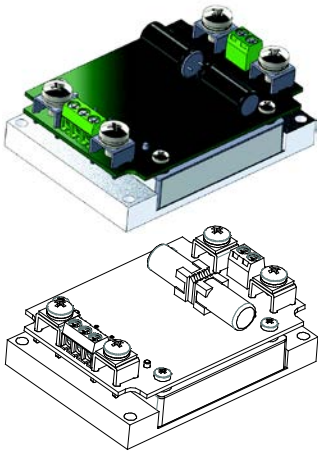
- TO ORDER:
- FOR SYNC PIN ADD THE SUFFIX "SY" TO THE MODEL NUMBER
  - FOR CASE PIN ADD THE SUFFIX "CP" TO THE MODEL NUMBER
  - UNIT COMES WITH EITHER M3x0.5 THREADED-THRU INSERTS OR FOR Ø.126 THRU-HOLE ADD THE "TH" SUFFIX TO MODEL NUMBER
  - FOR HEATSINK SEE THE "PRODUCT OPTIONS" TABLE FOR DIFFERENT OPTIONS  
NOTE: THRU-HOLE MODELS CANNOT BE EQUIPPED WITH A HEATSINK
  - FOR TERMINAL BLOCK OPTIONS SEE PAGE 6

Product Options		Suffix	Product Options		Suffix	
Negative Remote ON/OFF Logic	0.200" pin length	R	Heatsinks <sup>(1)(2)</sup>	H = 0.45" Vertical Fin	P/N: 7G-0021A-F	H
	0.145" pin length	RL		H = 0.24" Horizontal Fin	P/N: 7G-0022A-F	H1
Positive Remote ON/OFF Logic	0.200" pin length	None		H = 0.24" Vertical Fin	P/N: 7G-0023A-F	H2
	0.145" pin length	S		H = 0.45" Horizontal Fin	P/N: 7G-0024A-F	H3
Thru-Hole Inserts <sup>(1)</sup>	Ø0.126 thru-hole (no thread) inserts	TH	Terminal Block <sup>(2)(3)(4)(5)</sup>	Terminal Block		T
Sync Pin <sup>(3)</sup>		SY		Terminal Block with Aluminum Base-plate and EMC Filter		TF
Case Pin <sup>(3)</sup>		CP		Terminal block with anodized aluminum base-plate and EMC filter, can be connected to protective earth (PE)		TF1

- NOTES
- Models with thru-hole inserts cannot be equipped with a heatsink.
  - Terminal block models (suffix "T", "TF", and "TF1") cannot be equipped with a heatsink.
  - No "SY" or "CP" functions for terminal block types.
  - Only 0.200" pin length is available with terminal block options.
  - Models with EMC filter (suffix "TF" and "TF1") meet EN55011, EN55022 Class A.

TERMINAL BLOCK OPTIONS

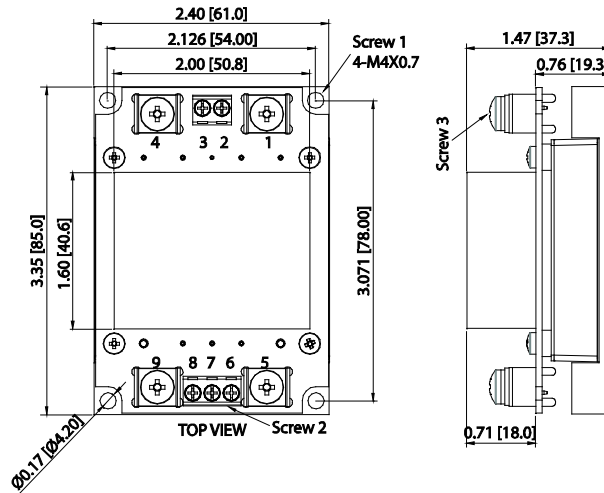
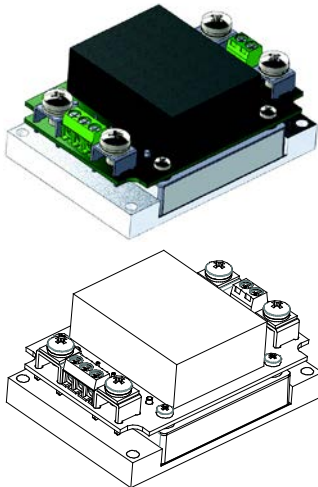
Terminal Block with Aluminum Base-plate - Suffix "T"



PIN CONNECTIONS		
Pin	Define	Wire Range
1	-INPUT	8AWG to 9AWG
2	NC	NA
3	CTRL	14AWG to 18AWG
4	+INPUT	8AWG to 9AWG
5	-OUTPUT	4AWG to 5AWG
6	-SENSE	14AWG to 18AWG
7	TRIM	14AWG to 18AWG
8	+SENSE	14AWG to 18AWG
9	+OUTPUT	4AWG to 5AWG

- NOTES:  
 1. Unit: Inches [mm]  
 2. Tolerance: X.XX±0.02 [X.X±0.5]  
           X.XXX±0.01 [X.XX±0.25]  
 3. Pin pitch tolerance±0.01 [±0.25]  
 4. Pin dimension tolerance: ±0.004 [±0.10]  
 5. Weight: 8.29oz (235g)  
 6. Terminal block models can not be equipped with a heatsink  
 7. No "SY" or "CP" functions for terminal block  $\psi$  pes  
 8. Only 0.200" pin length is available with terminal block options  
 9. Screw 1 locked torque: Max 11.2kgf-cm (1.10N-m)  
 10. Screw 2 locked torque: Max 5.2kgf-cm (0.51N-m)  
 11. Screw 3 locked torque: Max 16.8kgf-cm (1.65N-m)

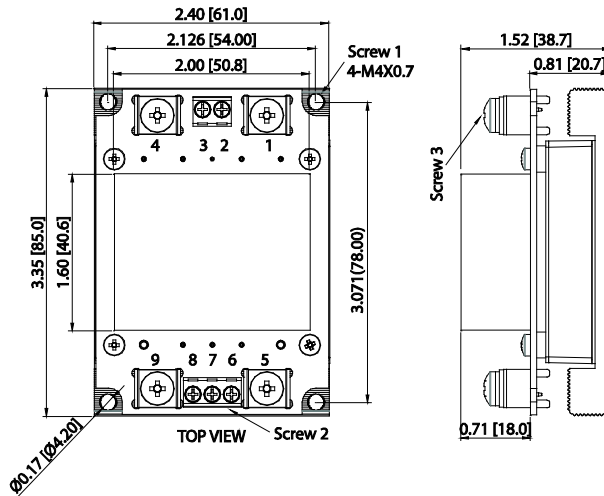
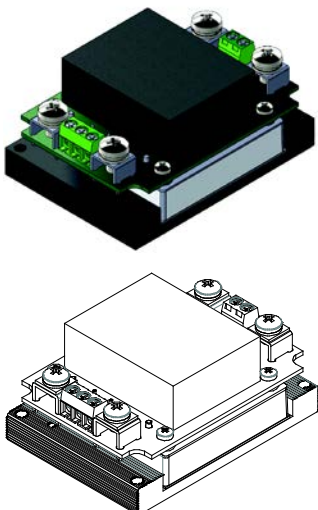
Terminal Block with Aluminum Base-plate and EMC Filter (EN55022 Class A) - Suffix "TF"



PIN CONNECTIONS		
Pin	Define	Wire Range
1	-INPUT	8AWG to 9AWG
2	NC	NA
3	CTRL	14AWG to 18AWG
4	+INPUT	8AWG to 9AWG
5	-OUTPUT	4AWG to 5AWG
6	-SENSE	14AWG to 18AWG
7	TRIM	14AWG to 18AWG
8	+SENSE	14AWG to 18AWG
9	+OUTPUT	4AWG to 5AWG

- NOTES:  
 1. Unit: inches [mm]  
 2. Tolerance: X.XX±0.02 [X.X±0.5]  
           X.XXX±0.01 [X.XX±0.25]  
 3. Pin pitch tolerance±0.01 [±0.25]  
 4. Pin dimension tolerance: ±0.004 [±0.10]  
 5. Weight: 9.88oz (280g)  
 6. Terminal block models can not be equipped with a heatsink  
 7. No "SY" or "CP" functions for terminal block  $\psi$  pes  
 8. Only 0.200" pin length is available with terminal block options  
 9. Screw 1 locked torque: Max 11.2kgf-cm (1.10N-m)  
 10. Screw 2 locked torque: Max 5.2kgf-cm (0.51N-m)  
 11. Screw 3 locked torque: Max 16.8kgf-cm (1.65N-m)

Terminal Block with Anodized Aluminum Base-plate and EMC Filter (EN55022 Class A) and can be Connected to PE - Suffix "TF1"



PIN CONNECTIONS		
Pin	Define	Wire Range
1	-INPUT	8AWG to 9AWG
2	NC	NA
3	CTRL	14AWG to 18AWG
4	+INPUT	8AWG to 9AWG
5	-OUTPUT	4AWG to 5AWG
6	-SENSE	14AWG to 18AWG
7	TRIM	14AWG to 18AWG
8	+SENSE	14AWG to 18AWG
9	+OUTPUT	4AWG to 5AWG

- NOTES:  
 1. Unit: Inches [mm]  
 2. Tolerance: X.XX±0.02 [X.X±0.5]  
           X.XXX±0.01 [X.XX±0.25]  
 3. Pin pitch tolerance±0.01 [±0.25]  
 4. Pin dimension tolerance: ±0.004 [±0.10]  
 5. Weight: 10.12oz (287g)  
 6. Terminal block models can not be equipped with a heatsink  
 7. No "SY" or "CP" functions for terminal block  $\psi$  pes  
 8. Only 0.200" pin length is available with terminal block options  
 9. Screw 1 locked torque: Max 11.2kgf-cm (1.10N-m)  
 10. Screw 2 locked torque: Max 5.2kgf-cm (0.51N-m)  
 11. Screw 3 locked torque: Max 16.8kgf-cm (1.65N-m)

**HEATSINK OPTIONS**

Vertical Fin Orientation (Suffixes "H", "H2")	Horizontal Fin Orientation (Suffixes "H1", "H3")
<p><b>Heatsink Options</b>  H = 0.24" (H2 suffix)  H = 0.45" (H suffix)</p> <p><b>NOTES</b>  1. Unit: inches (mm)  2. Tolerance: x.xxx±0.02 (x.xx±0.5)                    x.xxx±0.01 (x.xx±0.25)  3. All dimensions are for reference only</p>	<p><b>Heatsink Options</b>  H = 0.24" (H2 suffix)  H = 0.45" (H suffix)</p> <p><b>NOTES</b>  1. Unit: inches (mm)  2. Tolerance: x.xxx±0.02 (x.xx±0.5)                    x.xxx±0.01 (x.xx±0.25)  3. All dimensions are for reference only</p>

**OUTPUT VOLTAGE ADJUSTMENT**

Output is adjustable for 10% trim up or -20% trim down of nominal output voltage by connecting an external resistor between the TRIM pin and either the +SENSE or -SENSE pins. With an external resistor between the TRIM and -SENSE pin, the output voltage set decreases. With an external between the TRIM and +SENSE pin, the output voltage set point increases. Maximum output deviation is +10% inclusive of remote sense. The value of the external resistor can be obtained by the equations below. The external TRIM resistor needs to be at least 1/8W resistor.

Trim Up	Trim Down
$R_U = \left( \frac{V_{OUT}(100 + \Delta\%)}{1.225\Delta\%} - \frac{(100 + 2\Delta\%)}{\Delta\%} \right) K\Omega$	$R_D = \left( \frac{100}{\Delta\%} - 2 \right) K\Omega$

**MODEL NUMBER SETUP**

DCHB	200	-	24	S	12	R
Series Name	Output Power		Input Voltage	Output Quantity	Output Voltage	Remote On/Off & Pin Length
	<b>200:</b> 200 Watts		<b>12:</b> 8.5 - 22 VDC <b>9:</b> 22 VDC <b>24:</b> 16.5 - 36 VDC <b>48:</b> 33 - 75 VDC	<b>S:</b> Single	<b>3.3:</b> 3.3 VDC <b>05:</b> 5 VDC <b>12:</b> 12 VDC <b>15:</b> 15 VDC <b>24:</b> 24 VDC <b>28:</b> 28 VDC <b>48:</b> 48 VDC <b>53:</b> 53 VDC	<b>None:</b> positive Logic, 0.200" pin length <b>S:</b> positive Logic, 0.145" pin length <b>R:</b> negative Logic, 0.200" pin length <b>RL:</b> negative Logic, 0.145" pin length

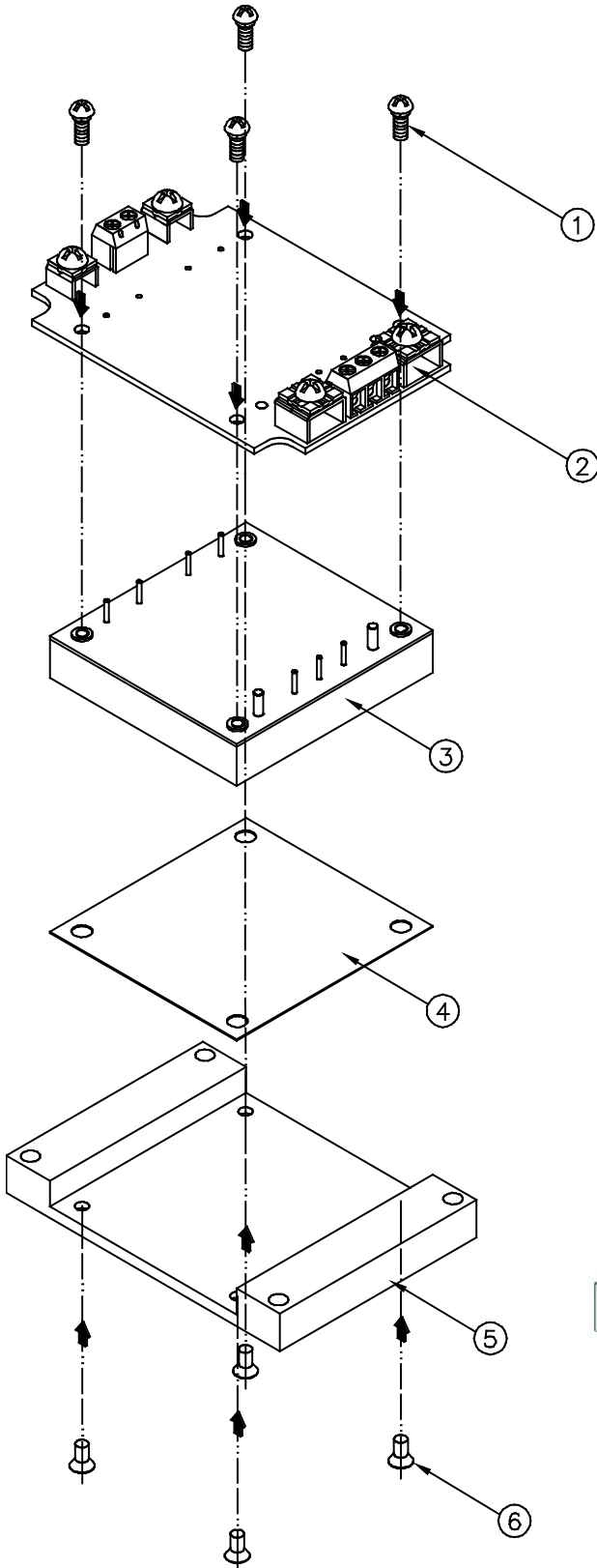
Y	C	TH	H	TF
Sync Pin <sup>(3)</sup>	Case Pin <sup>(3)</sup>	Thru-Hole Inserts <sup>(1)</sup>	Heatsink <sup>(1)(2)</sup>	Terminal Block <sup>(2)(3)(4)(5)</sup>
<b>SY:</b> sync pin	<b>CP:</b> case pin	<b>None:</b> threaded inserts <b>TH:</b> Ø0.126 thru-hole inserts	<b>None:</b> no heatsink <b>H:</b> 0.45" vertical <b>H1:</b> 0.24" horizontal <b>H2:</b> 0.24" vertical <b>H3:</b> 0.45" horizontal	<b>None:</b> no terminal block <b>T:</b> Terminal block with aluminum base-plate <b>TF:</b> Terminal block with aluminum base-plate and EMC filter <b>TF1:</b> Terminal block with anodized aluminum base-plate and EMC filter, can be connected to Protective Earth (PE)

**NOTES**

1. Models with thru-hole inserts cannot be equipped with a heatsink.
2. Terminal block models (suffix "T", "TF", and "TF1") cannot be equipped with a heatsink.
3. No "SY" or "CP" functions for terminal block types.
4. Only 0.200" pin length is available with terminal block options.
5. Models with EMC filter (suffix "TF" and "TF1") meet EN55011, EN55022 Class A.

APPLICATION NOTES

Assembly

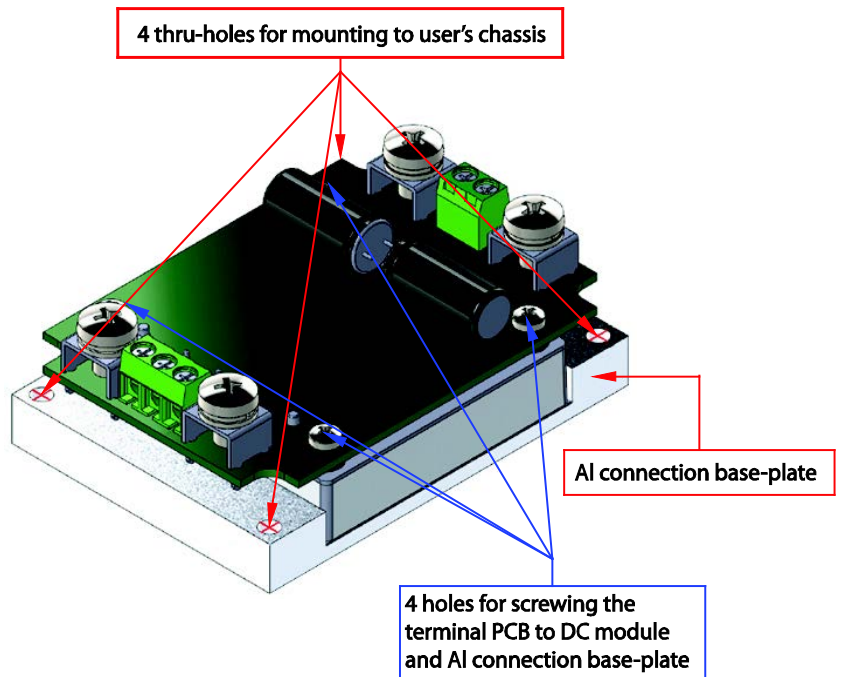


- ① Round-Head screw and spring washer (see note)
- ② Terminal block
- ③ DC/DC converter
- ④ Thermal pad
- ⑤ Aluminum connection base-plate
- ⑥ Flat-head screw M3X0.5-6L (see note)

**Note: Information for Assemble Screw**

1. Tools: Automatic screwdriver
2. Torque: 4~5 kgf.cm
3. Assembly Sequence of Screw

Screw in opposite angles first, then fasten all four screws





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**COMPANY INFORMATION**

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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.

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