

CINCON ELECTRONICS



GETRONIC

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RAILWAY

DC-DC CONVERTER

CATALOG **2016**



Cincon, Reliability Excellence

Cincon offers a wide range of EN50155 compliant DC-DC converters from 6.6W – 300W, which are specially designed for railway applications. These isolated DC-DC converters supply the electric and electronic systems on board and track side, particularly for the sophisticated device in trains, for such electronics as LED displays, audio amplifiers, safety monitors, lighting, communications and door control systems.

Cincon uses well proven technology to achieve extremely efficient industry leading performance, large-scale testing and examination to guarantee high quality and long operational life. Cincon railway DC-DC converters are fully encapsulated in a heat resistant silicone rubber compound, which protects against high levels of shock and vibration, moisture, dust and other contaminants. Full electronic protection, surge protection and transients protection also contribute to product reliability.

In addition to a range of track-side railway applications, the units are suitable for operation in industrial, mining, military, marine and other rugged environments.

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RAILWAY DC-DC CONVERTER

PRODUCT FEATURES

Operational

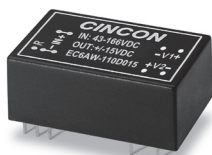
- High efficiency to 92%
- Fixed switching frequency
- Output power from 6.6W-300W
- Low no load power consumption
- Input voltage range 43-160 VDC & 66-160 VDC
- Input voltage ranges fully cover the requirements of EN 50155
- External filtering solutions are available to your applications

General Specification

- EN 50155 compliant
- Switching frequency 200-300KHz
- Output voltage accuracy +/-1.5%
- External trim range +10% to -10%
- Isolation voltage 2250 VDC & 3000 VRMS
- Storage temperature range from -55°C to +105°C & +125°C
- Operating case temperature range from -40°C to +100°C & +105°C

QUICK SELECTION

OUTPUT POWER	INPUT VOLTAGE	OUTPUT VOLTAGE	
ISOLATION	EFFICIENCY	PACKAGE	OPERATING CASE TEMPERATURE



EC6AW-110

6.6W-10W	43-160VDC	3.3V, 5V, 12V, 15V, +/-5V, +/-12V, +/-15V	
2250VDC	83-86%	DIP 24	-40°C - 100°C



EC7BW-110

20W	43-160VDC	5V, 12V, 15V, +/-12V, +/-15V	
2250VDC	88.5-90%	2" x 1"	-40°C - 105°C



ECLB40W-110

40W	43-160VDC	3.3V, 5V, 12V, 15V, +/-12V, +/-15V, +/-24V	
2250VDC	88-91%	2.05"x1.2"	-40°C - 105°C



CQB60W-110S

60W	43-160VDC	5V, 12V, 15V, 24V, 28V, 48V	
2250VDC	89-92%	Quarter Brick	-40°C - 100°C



CQB100-110S

100W	66-160VDC	3.3V, 5V, 12V, 24V	
2250VDC	90-93%	Quarter Brick	-40°C - 100°C

Protection

- Input under-voltage lockout
- Output over current protection
- Output over voltage protection
- Over temperature protection
- Continuous short circuit protection

Mechanical

- Industry standard pin-out configuration
- Industry standard footprint: DIP 24, 2" x 1", "2.05 x 1.2", Quarter-Brick, Half-Brick & Full-Brick

Safety & Compliance

- Safety standard: UL 60950-1 2nd (basic insulation)
- EMC: EN 50155 (EN 50121-3-2), external filter required
- Shock & Vibration: EN 50155 (EN 61373)

OUTPUT POWER	INPUT VOLTAGE	OUTPUT VOLTAGE	
ISOLATION	EFFICIENCY	PACKAGE	OPERATING CASE TEMPERATURE



CHB100-110S

100W	66-160VDC	12V, 15V, 24V, 48V	
3000VRMS	85-86%	Half Brick	-40°C - 100°C



CQB150W-110S

150W	43-160VDC	5V, 12V, 24V, 28V, 48V	
2250VDC	90-91%	Quarter Brick	-40°C - 100°C



CHB150-110S

150W	66-160VDC	5V, 12V, 24V	
2250VDC	92-92.5%	Half Brick	-40°C - 100°C



CFB200-110S

200W	66-160VDC	12V, 15V, 24V, 48V	
3000VRMS	85-86%	Full Brick	-40°C - 100°C



CHB300W-110S

300W	43-160VDC	5V, 12V, 24V, 28V, 48V	
2250VDC	89-90%	Half Brick	-40°C - 100°C

Modified Product Support

Recognizing the requirements for matching standard products to unique applications, Cincon is dedicated to provide support for customers requiring additional features or modification to catalog products.

EC6AW-110 SERIES

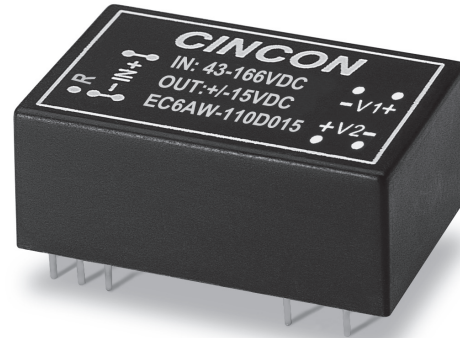
6.6-10 WATT, INPUT 43-160 VDC

RAILWAY

DC-DC CONVERTER

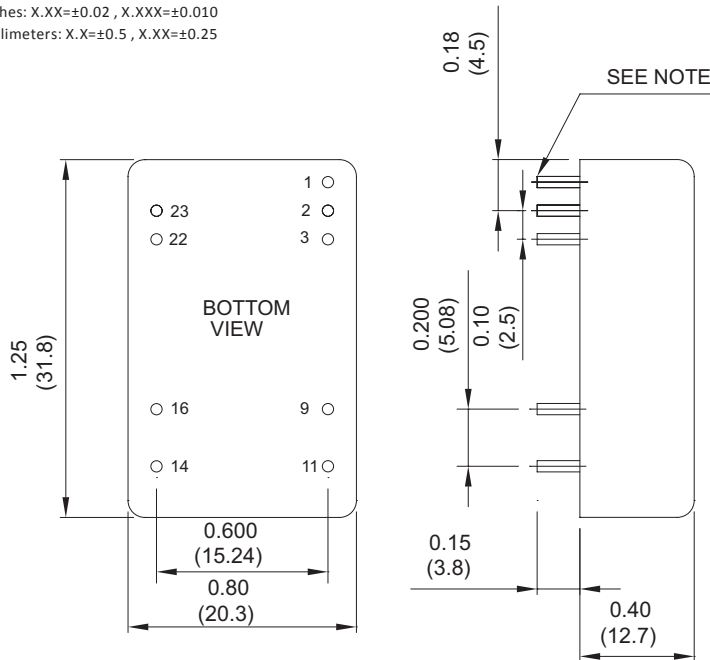
Features

- ◆ 6.6-10W Isolated Output
- ◆ Efficiency to 86%
- ◆ 4 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Input Under-Voltage Protection
- ◆ Remote On/Off
- ◆ Continuous Short Circuit Protection
- ◆ Over Current Protection
- ◆ Safety Standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



Mechanical Dimensions

NOTE: Pin Size is 0.02±0.002 Inch (0.5±0.05 mm) DIA
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
Millimeters: X.X=±0.5, X.XX=±0.25



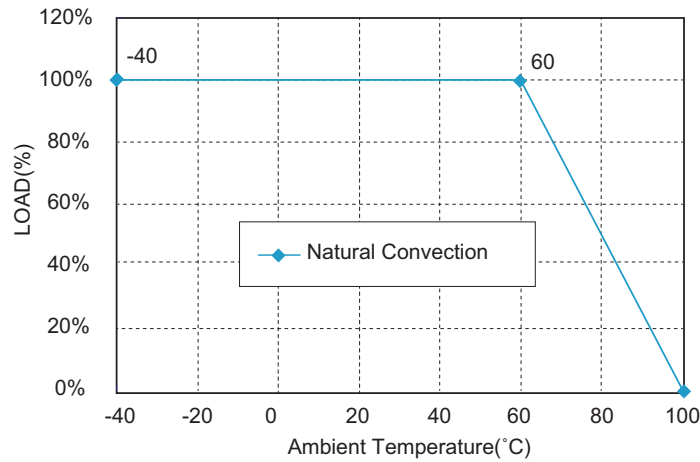
PIN CONNECTION		
PIN	Single Output	Dual Output
1	Remote On/Off	Remote On/Off
2,3	-V Input	-V Input
4,5	NP	NP
9	NP	Common
10	NP	NP
11	NC	-V Output
12	NP	NP
13	NP	NP
14	+V Output	+V Output
15	NP	NP
16	-V Output	Common
20,21,24	NP	NP
22,23	+V Input	+V Input

* NC-NO CONNECTION WITH PIN

* NP-NO PIN

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
EC6AW-110S33	43-160 VDC	3.3 VDC	0 mA	2000 mA	6 mA	72 mA	83	2000μF
EC6AW-110S05	43-160 VDC	5 VDC	0 mA	1600 mA	6 mA	86 mA	85	1600μF
EC6AW-110S12	43-160 VDC	12 VDC	0 mA	835 mA	6 mA	106 mA	86	835μF
EC6AW-110S15	43-160 VDC	15 VDC	0 mA	666 mA	6 mA	106 mA	86	666μF
EC6AW-110D05	43-160 VDC	±5 VDC	0 mA	±800mA	6 mA	87 mA	84	800μF
EC6AW-110D12	43-160 VDC	±12 VDC	0 mA	±416mA	6 mA	107 mA	85	416μF
EC6AW-110D15	43-160 VDC	±15 VDC	0 mA	±333mA	6 mA	107 mA	85	333μF

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under Voltage Lockout	Power up 40V Power down 38V
Positive Logic Remote On/Off	see note 3 & 4
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Voltage Balance (Dual Output)	±2.0% max.
Transient Response:	
75% ~ 100% Step Load Change	Error Band ±5% Vout nominal
	Recovery Time < 500µs
Ripple & Noise, 20MHz BW (Measured with 1µF MLCC)	
Vo= 3.3V & 5V	75mV pk-pk, max
Vo= 12V, 15V, ±12V & ±15V	100mV pk-pk, max
Temperature Coefficient	±0.03%/°C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
	Single ±1.0% max.
	Dual
Cross Regulation (Dual output)	
Load Cross Variation 10%/100%	±5.0% max.
Over Voltage Protection	Zener or TVS Clamp
Current Limit	150% Nominal Output typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	2250 VDC min.
Isolation Resistance	10 ⁹ ohms min
Isolation Capacitance	1500pF typ.
Switching Frequency	300KHz typ.
Operating Ambient Temperature Range	-40°C to +85°C
De-rating, Above 60°C	Linearly to Zero Power at +100°C
Case Temperature (note 5)	100°C
Cooling	Natural Convection
Storage Temperature Range	-55°C to +125°C
Humidity	95% RH max. Non-Condensing
Safety	UL60950-1 2 nd (Basic insulation)
EMC (note 6)	EN50155 (EN50121-3-2) with external filter
	EN50155 (EN61373)
Shock/Vibration	1.25 × 0.80 × 0.50 inches (31.8 × 20.3 × 12.7mm)
Dimensions	Non-Conductive Black Plastic
Case Material	

NOTE

- Measured from high line to low line.
- Measured from full load to min. load.
- Logic compatibility ... CMOS or open collector TTL, referenced to -Vin.

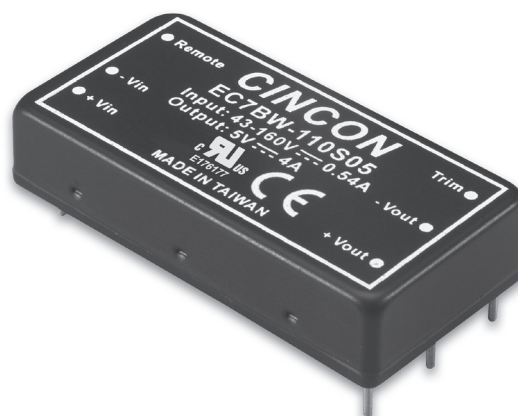
Module On	>3.5VDC to 75VDC or open circuit
Module Off	<1.2VDC
- Suffix "N" to the model number with negative logic remote On/Off

Module On	< 1.2Vdc
Module Off	>3.5VDC to 75VDC or open circuit
- Maximum case temperature under any operating condition should not be exceeded 100°C.
- Design meet EN50155 and RIA12 refer to application note.

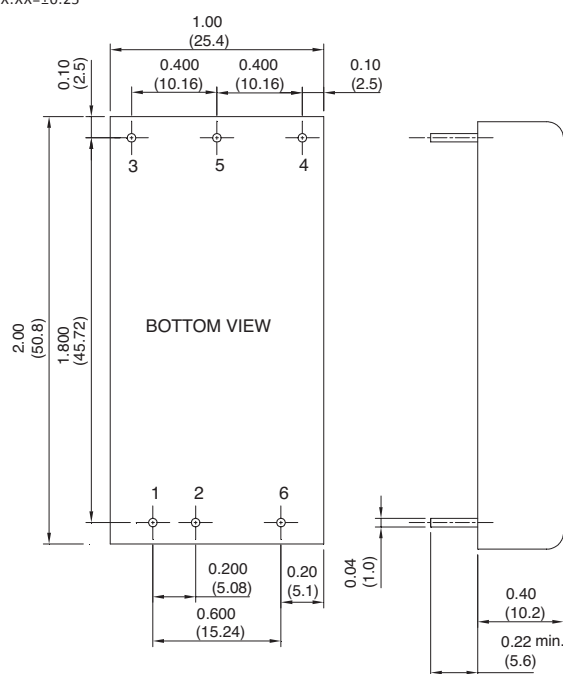
RAILWAY

DC-DC CONVERTER

- ◆ 20W Isolated Output
- ◆ Efficiency to 90%
- ◆ 250KHz Switching Frequency
- ◆ 4 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Low No Load Power Consumption
- ◆ Continuous Short Circuit Protection
- ◆ Size 2 "x 1" x 0.4"
- ◆ Safety Standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



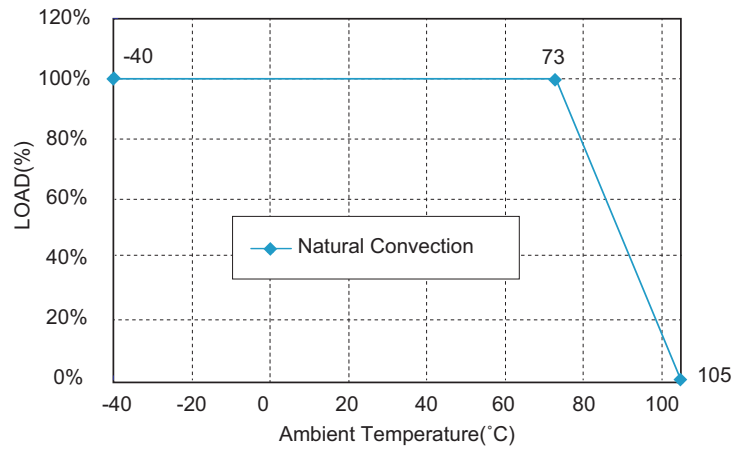
NOTE: Pin Size is 0.04±0.004 Inch (1.0±0.1 mm) DIA
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25



PIN CONNECTION		
PIN	Single Output	Dual Output
1	+V Input	+V Input
2	-V Input	-V Input
3	+V Output	+V Output
4	Trim	-V Output
5	-V Output	Common
6	Remote On/Off	

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
EC7BW-110S05	43-160 VDC	5 VDC	0 mA	4000 mA	3 mA	205.4 mA	88.5%	5600μF
EC7BW-110S12	43-160 VDC	12 VDC	0 mA	1670 mA	3 mA	202.0 mA	90%	1000μF
EC7BW-110S15	43-160 VDC	15 VDC	0 mA	1330 mA	3 mA	203.1 mA	89.5%	1000μF
EC7BW-110D12	43-160 VDC	±12 VDC	0 mA	±833 mA	3 mA	204.3 mA	89%	680μF
EC7BW-110D15	43-160 VDC	±15 VDC	0 mA	±667 mA	3 mA	205.4 mA	88.5%	350μF

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under Voltage Lockout	Power up 40V Power down 38V
Positive Logic Remote On/Off	see note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Voltage Balance (Dual Output)	±1.0% max.
Transient Response:	
25% Step Load Change	< 250µs
External Trim Adj. Range	
(Single Output Models Only)	±10%
Ripple & Noise, 20MHz BW (note 3).....5V	40mV RMS max. 75mV pk-pk max.
12V & 15V & ±12V & ±15V	40mV RMS max. 100mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	Single ±0.5% max. Dual ±1.0% max.
Cross Regulation (Dual output)	
Load Cross Variation 10%/100%	±5.0% max
Over Voltage Protection	Zener or TVS Clamp
Current Limit	110%-160% Nominal Output
Start up time	Single 15ms typ. Dual 25ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min.
Isolation Resistance	10 ⁹ ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	250KHz typ.
EMI/RFI	Conductive EMI Meets EN55022 Class A
Operating Ambient Temperature	-40°C to +85°C
De-rating, Above 73°C	Linearly to Zero power at 105°C
Case Temperature	105°C max.
Storage Temperature	-55°C to +125°C
Humidity	95% RH max. Non condensing
Safety	UL60950-1 2 nd (Basic insulation)
EMC (note 6)	EN50155 (EN50121-3-2) with external filter
Shock/Vibration	EN50155 (EN61373)
Dimensions	2.00 x 1.00 x 0.40 inches (50.8 x 25.4 x 10.2 mm)
Case Material	Black Coated Copper with Non-Conductive Base
Weight	35 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 1µF ceramic capacitor across output.
4. Logic compatibility

Module On	open collector ref. to -Input
Module Off	> 3.5VDC to 75VDC or open circuit
5. Suffix "N" to the model number with negative logic remote On/Off

Module On	< 1.2VDC
Module Off	> 3.5VDC to 75VDC or open circuit
6. Design meet EN50155 and RIA12 refer to application note.

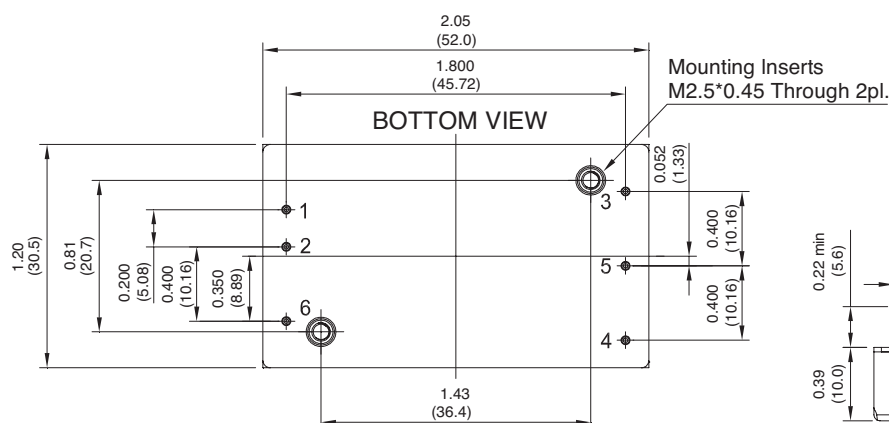
RAILWAY

DC-DC CONVERTER

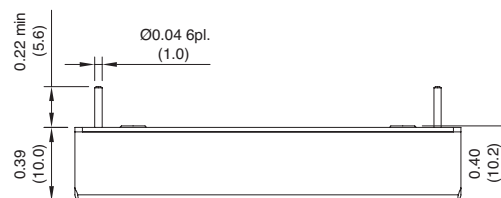
- ◆ 40W Isolated Output
- ◆ Efficiency to 91%
- ◆ 2.05" X 1.2" X 0.4" Six-Sided Shield Metal Case
- ◆ 4 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Fixed Switching Frequency
- ◆ Input Under Voltage Protection
- ◆ Over Current Protection
- ◆ Remote On/Off
- ◆ Low No Load Power Consumption
- ◆ Continuous Short Circuit Protection
- ◆ No Tantalum Capacitor Inside
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



NOTE: Pin Size is 0.04±0.004 Inch (1.0±0.1 mm) DIA
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
 Millimeters: X.X=±0.5 , X.XX=±0.25

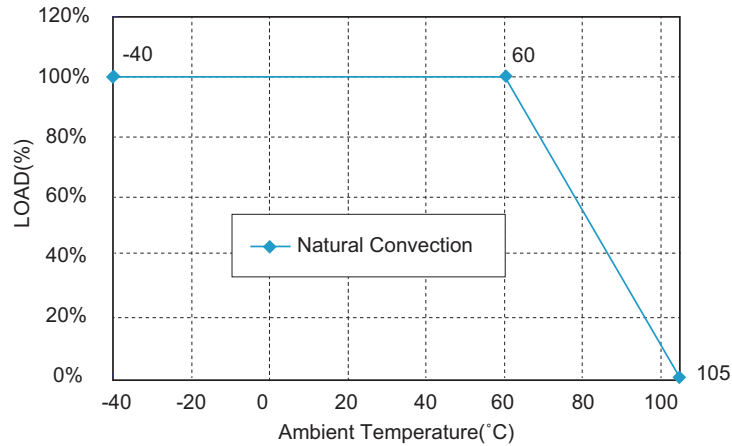


PIN CONNECTION		
PIN	Single Output	Dual Output
1	+V Input	+V Input
2	-V Input	-V Input
3	+V Output	+V Output
4	Trim	-V Output
5	-V Output	Common
6	Remote On/Off	



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
ECLB40W-110S33	43-160 VDC	3.3 VDC	0 mA	10000 mA	6 mA	340 mA	88%	10000μF
ECLB40W-110S05	43-160 VDC	5 VDC	0 mA	8000 mA	6 mA	409 mA	88.5%	8000μF
ECLB40W-110S12	43-160 VDC	12 VDC	0 mA	3333 mA	6 mA	404 mA	90%	3300μF
ECLB40W-110S15	43-160 VDC	15 VDC	0 mA	2666 mA	6 mA	399 mA	91%	2700μF
ECLB40W-110D12	43-160 VDC	±12 VDC	0 mA	±1667 mA	6 mA	408 mA	88%	1650μF
ECLB40W-110D15	43-160 VDC	±15 VDC	0 mA	±1333 mA	6 mA	408 mA	88.5%	1350μF
ECLB40W-110D24	43-160 VDC	±24 VDC	0 mA	±833 mA	6 mA	408 mA	89%	850μF

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under Voltage Lockout	Power up 40V
	Power down 38V
Positive Logic Remote On/Off	see note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Voltage Balance (Dual Output)	±1.0% max.
Transient Response:	
25% Step Load Change	Error Band
	Recovery Time
	+/-5% Vout Nominal
	< 250µs
External Trim Adj. Range	
(Single Output Models Only)	±10%
Ripple & Noise, 20MHz BW	
(Measured with 1µF MLCC)	
Vo = 3.3V & 5V	100mV pk-pk max.
Vo = 12V, 15V, ±12V & ±15V	150mV pk-pk max.
Vo = ±24V	200mV pk-pk max.
Temperature Coefficient	±0.02%/°C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
	±1.0% max.
Cross Regulation (Dual output)	
Load Cross Variation 10%/100%	±5.0% max.
Over Voltage Protection	Zener or TVS Clamp
Current Limit	110%-160% Nominal Output
Start up time	15ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min.
	Input/Case 1600VDC min.
	Output/Case 1600VDC min.
	10 ⁹ ohms min.
Isolation Resistance	1500pF typ.
Isolation Capacitance	Output/Case 1000pF typ.
Case Grounding	250KHz typ.
Switching Frequency	Six-Sided Continuous Shield
EMI/RFI	-40°C to +85°C
Operating Ambient Temperature Range	Linearly to Zero Power at +105°C
De-rating, Above 60°	105°C max.
Case Temperature (note 5)	Natural Convection
Cooling	-55°C to +125°C
Storage Temperature Range	110°C typ.
Thermal Shutdown, Case Temp.	95% RH max. Non-Condensing
Humidity	905Khrs typ.
MTBFMIL-STD-217F, GB, 25°C, Full Load	UL60950-1 2 nd (Basic insulation)
Safety	EN50155 (EN50121-3-2)
EMC (note 6)	with external filter
	EN50155 (EN61373)
Shock/Vibration	2.05 x 1.20 x 0.40 inches
Dimensions	(52.0 x 30.5 x 10.2 mm)
Case Material	Aluminum with
	Non-Conductive Base
Weight	36 g

NOTE

- Measured from high line to low line.
- Measured from full load to no load.
- Logic compatibility ... CMOS or open collector TTL, referenced to -Vin.

Module On	>3.5VDC to 75VDC or open circuit
Module Off	<1.2VDC
- Suffix "N" to the model number with negative logic remote On/Off

Module On	< 1.2VDC
Module Off	>3.5VDC to 75VDC or open circuit
- Maximum case temperature under any operating condition should not be exceeded 105°C.
- Design meet EN50155 and RIA12 refer to application note.

CQB60W-110S SERIES

60 WATT, INPUT 43-160 VDC

RAILWAY

DC-DC CONVERTER

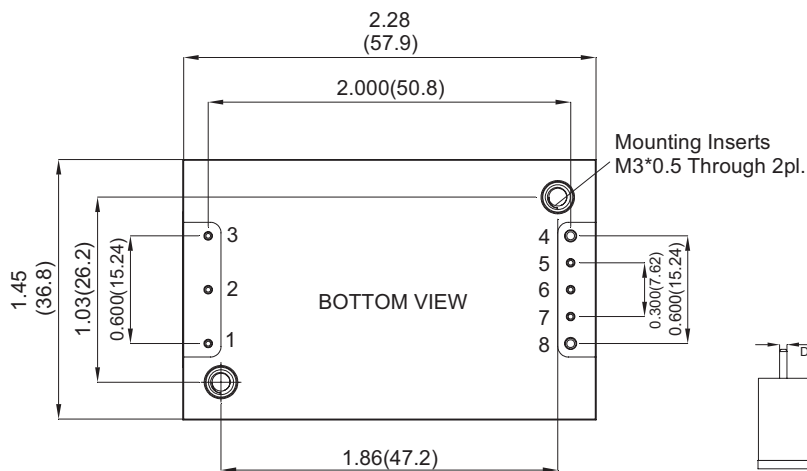
Features

- ◆ 60W Isolated Output
- ◆ Efficiency to 92%
- ◆ Low No Load Power Consumption
- ◆ 4 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Over Temperature/Voltage/Current Protection
- ◆ Continuous Short Circuit Protection
- ◆ Quarter Brick Size
- ◆ Operating Altitude 4000m
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)

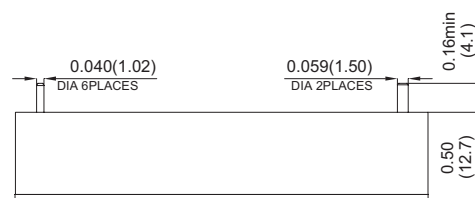


Mechanical Dimensions

All Dimensions in Inches (mm)
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25

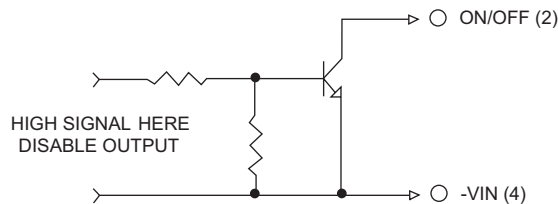


PIN	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

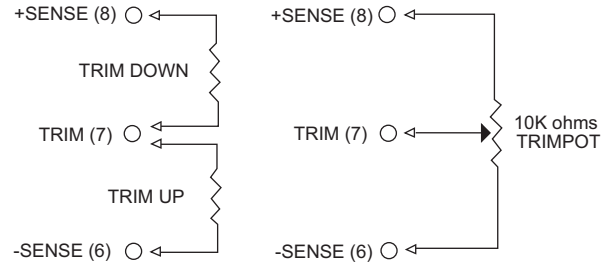


MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CQB60W-110S05	43-160 VDC	5 VDC	0 mA	12 A	5 mA	600 mA	91	6800μF
CQB60W-110S12	43-160 VDC	12 VDC	0 mA	5 A	5 mA	593 mA	92	3300μF
CQB60W-110S15	43-160 VDC	15 VDC	0 mA	4 A	5 mA	606 mA	90	3300μF
CQB60W-110S24	43-160 VDC	24 VDC	0 mA	2.5 A	5 mA	606 mA	90	1200μF
CQB60W-110S28	43-160 VDC	28 VDC	0 mA	2.14 A	5 mA	606 mA	90	1200μF
CQB60W-110S48	43-160 VDC	48 VDC	0 mA	1.25 A	5 mA	613 mA	89	470μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under Voltage Lockout	Power up 42V Power down 38V
Positive Logic Remote On/Off	see note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 250μs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
5V	40mV RMS, 100mV pk-pk max.
12V/15V	60mV RMS, 150mV pk-pk max.
24V/28V	100mV RMS, 240mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-165% Nominal Output
Start up time	15ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min. Input/Case 2250VDC min. Output/Case 1500VDC min.
Isolation Resistance	10 ⁷ ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	200KHz typ.
Operating Case Temperature	-40°C to +100°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temp.	110°C typ.
Humidity	95% RH max. Non condensing
Operating Altitude	4000m
Safety	UL60950-1 2 nd (Basic insulation)
EMI	EN50155 (EN50121-3-2) with external filter
Shock/Vibration	EN50155 (EN61373)
Dimensions	2.28 × 1.45 × 0.50 inches (57.9 × 36.8 × 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	61.5 g

NOTE

- Measured from high line to low line.
- Measured from full load to zero load.
- Output ripple and noise measured with 10μF tantalum and 1μF ceramic capacitor across output.
- Logic compatibility open collector ref to -Input

Module On	> 3.5VDC to 75VDC or open circuit
Module Off	< 1.2 VDC
- Suffix "N" to the model number with negative logic remote On/Off

Module On	< 1.2 VDC
Module Off	> 3.5VDC to 75VDC or open circuit
- Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
- An external input capacitor 68μF for all models are recommended to reduce input ripple voltage.
- Design to meet EN50155 and RIA12 refer to application note.

CQB100-110S SERIES

100 WATT, INPUT 66-160 VDC

RAILWAY

DC-DC CONVERTER

Features

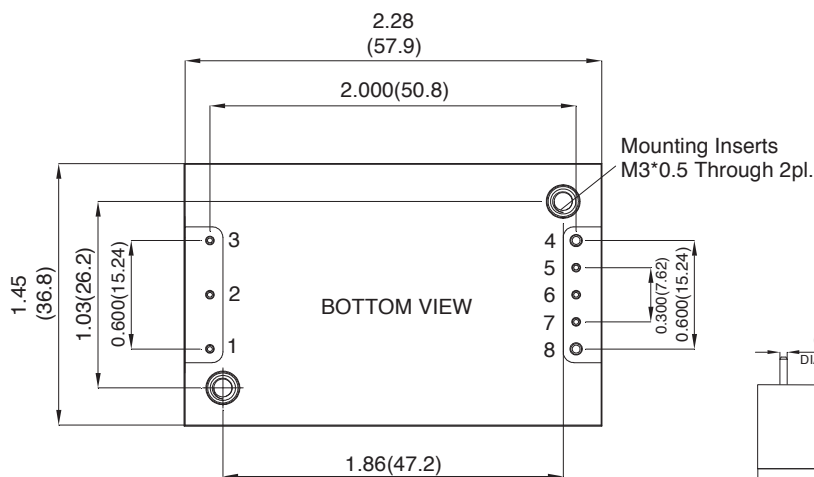
- ◆ 100W Isolated Output
- ◆ Efficiency to 93%
- ◆ 200KHz Switching Frequency
- ◆ 3 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Over Temperature Protection
- ◆ Over Voltage/Current Protection
- ◆ Continuous Short Circuit Protection
- ◆ Quarter Brick Size
- ◆ Safety standard: UL 60950-1 2nd (Except 3.3Vout)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



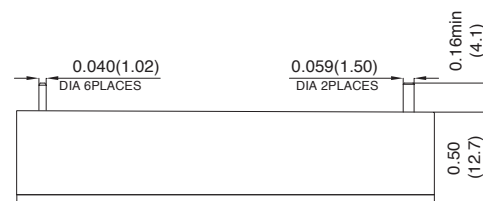
Mechanical Dimensions

All Dimensions in Inches (mm)

Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
Millimeters: X.X=±0.5, X.XX=±0.25

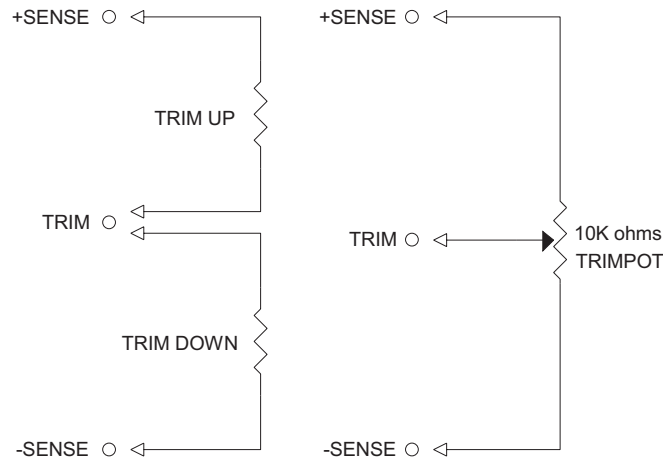


PIN	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CQB100-110S3V3	66-160 VDC	3.3 VDC	0 mA	25 A	40 mA	833 mA	90	10000µF
CQB100-110S05	66-160 VDC	5 VDC	0 mA	20 A	30 mA	983 mA	92.5	10000µF
CQB100-110S12	66-160 VDC	12 VDC	0 mA	8.4 A	40 mA	985 mA	93	8800µF
CQB100-110S24	66-160 VDC	24 VDC	0 mA	4.2 A	60 mA	996 mA	92	1500µF

External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under Voltage Lockout	power up 62V power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref. to -Input
Module On	> 3.5Vdc to 75Vdc or Open
Module Off	< 1.8Vdc
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 200µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
3.3 & 5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-180% Nominal Output
Start up time	45ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min. Input/Case 2250VDC min. Output/Case 1500VDC min. 10 ⁷ ohm min.
Isolation Resistance	1000pF typ.
Isolation Capacitance	200KHz typ.
Switching Frequency	-40°C to 100°C
Operating Case Temperature	-55°C to +105°C
Storage Temperature	105°C typ.
Thermal Shutdown, Case Temp.	95% RH max. Non condensing
Humidity	CQB100-110S05: 240Khrs
MTBF MIL-HDBK-217F, GB, 25°C, Full Load	CQB100-110S3V3: 400Khrs
	CQB100-110S12: 320Khrs
	CQB100-110S24: 320Khrs
	UL60950-1 2 nd (Basic insulation)
	EN50155 (EN50121-3-2)
	with External Filter
	EN50155 (EN61373)
	EN50155 (EN60068-2-1)
	2.28 x 1.45 x 0.50 inches
	(57.9 x 36.8 x 12.7 mm)
	Aluminum Baseplate with
	Plastic Case
	61.5 g
Safety (Except 3.3 Vout)	
EMC (note 7)	
Shock/Vibration	
Environmental	
Dimensions	
Case Material	
Weight	

NOTE

- Measured from high line to low line.
- Measured from full load to zero load.
- Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
- Suffix "N" to the model number with negative logic remote On/Off

Module On	< 1.8VDC
Module Off	> 3.5VDC to 75VDC or open circuit
- Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
- An external input capacitor 120µF for all models are recommended to reduce input ripple voltage.
- Design meet EN50155 and RIA12 refer to application note.

CHB100-110S SERIES

100 WATT, INPUT 66-160 VDC

RAILWAY

DC-DC CONVERTER

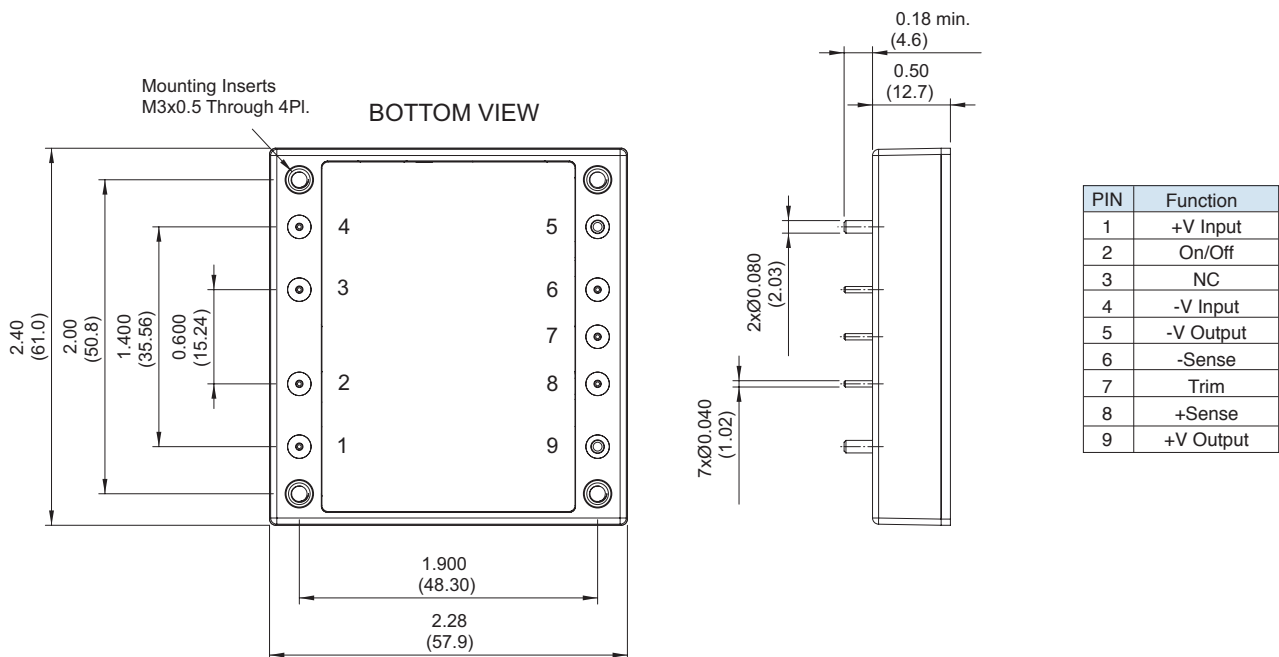
Features

- ◆ 100W Isolated Output
- ◆ Efficiency to 86%
- ◆ Low no load input power
- ◆ 3 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Over Temperature Protection
- ◆ Over Voltage/Current Protection
- ◆ Continuous Short Circuit Protection
- ◆ Half Brick Size
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



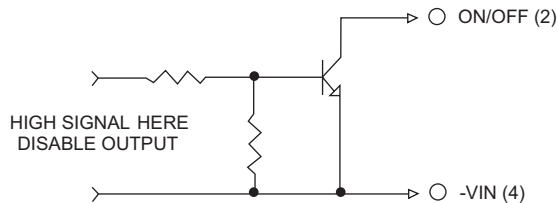
Mechanical Dimensions

All Dimensions in Inches (mm)
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25

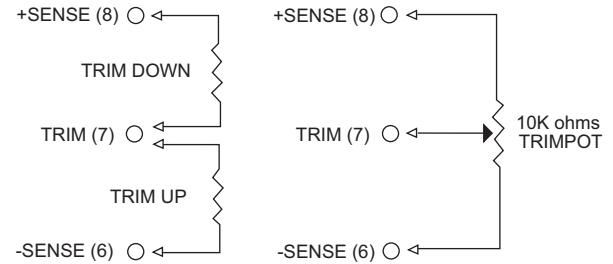


MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB100-110S12	66-160 VDC	12 VDC	0mA	8.3 A	5mA	1060mA	86	8300μF
CHB100-110S15	66-160 VDC	15 VDC	0mA	6.7 A	5mA	1070mA	85	4170μF
CHB100-110S24	66-160 VDC	24 VDC	0mA	4.17 A	5mA	1070mA	85	4170μF
CHB100-110S48	66-160 VDC	48 VDC	0mA	2.08 A	5mA	1070mA	85	2080μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under voltage lockout	power up 62V power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref to -Input
Module On	Open Circuit
Module Off	< 1.8Vdc
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 500μs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
12V, 15V	60mVRMS, 150mVpk-pk max.
24V	100mVRMS, 240mVpk-pk max.
48V	200mVRMS, 480mVpk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-150% Nominal Output
Start up time	120ms typ.

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10μF tantalum and 1μF ceramic capacitor across output. (48V: 1uF ceramic cap. only).

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 3000Vrms min. Input/Case 1500Vrms min. Output/Case 500Vrms min. 10 ⁹ ohm min.
Isolation Resistance	500pF typ.
Isolation Capacitance	250KHz typ.
Switching Frequency	-40°C to 100°C
Operating Case Temperature	-55°C to +105°C
Storage Temperature	105°C typ.
Thermal Shutdown, Case Temp.	95% RH max. Non condensing
Humidity	UL60950-1, EN50155
Safety	EN55022 Class A & Class B with external filter
EMI	EN50155 (EN61373)
Shock/Vibration	EN50155 (EN60068-2-1)
Environmental	2.28 × 2.40 × 0.50 inches (57.9 × 61.0 × 12.7 mm)
Dimensions	Aluminum Baseplate with Plastic Case
Case Material	90 g
Weight	

4. An external input capacitor 47μF for all models are recommended to reduce input ripple voltage.
5. Require a 47μF aluminum capacitor connected between +Vout and -Vout for 48Vout models.

CQB150W-110S SERIES

150 WATT, INPUT 43-160 VDC

RAILWAY

DC-DC CONVERTER

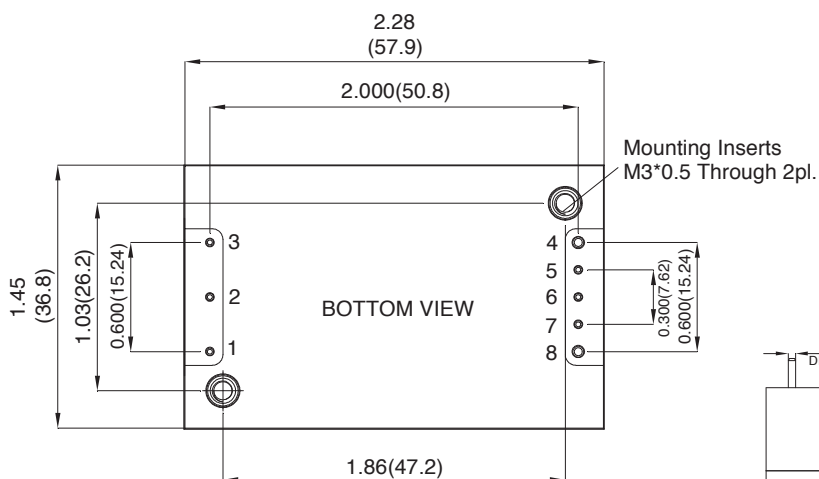
Features

- ◆ 150W Isolated Output
- ◆ Efficiency to 91%
- ◆ Fixed Switching Frequency
- ◆ 4 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Low No Load Power Consumption
- ◆ Over Temperature Protection
- ◆ Over Voltage/Current Protection
- ◆ Continuous Short Circuit Protection
- ◆ Quarter Brick Size
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)

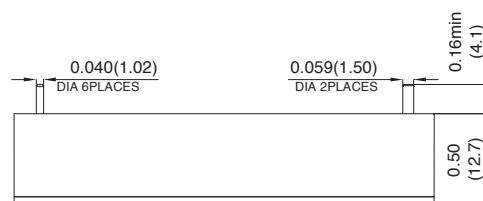


Mechanical Dimensions

All Dimensions in Inches (mm)
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25

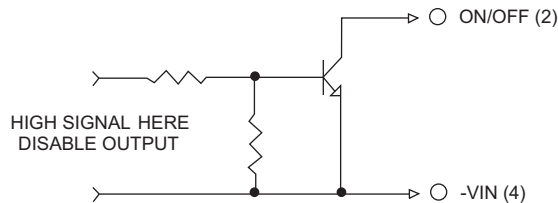


PIN	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

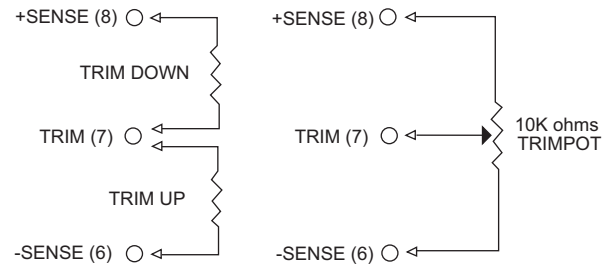


MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CQB150W-110S05	43-160VDC	5 VDC	0mA	30A	10 mA	1.50 A	91	10000µF
CQB150W-110S12	43-160VDC	12 VDC	0mA	12.5A	10 mA	1.50 A	91	8800µF
CQB150W-110S24	43-160VDC	24 VDC	0mA	6.3A	10 mA	1.51 A	90	2200µF
CQB150W-110S28	43-160VDC	28 VDC	0mA	5.4A	10 mA	1.51 A	91	2200µF
CQB150W-110S48	43-160VDC	48 VDC	0mA	3.2A	10 mA	1.53 A	91	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under voltage lockout	power up 42V power down 38V
Positive Logic Remote On/Off	see note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	
5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V & 28V	100mV RMS, 280mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-160% Nominal Output
Start up time	60ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min. Input/Case 2250VDC min. Output/Case 2250VDC min.
Isolation Resistance	10 ⁷ ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	300KHz typ.
Operating Ambient Temperature	-40°C to +105°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temperature	110°C typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 x 1.45 x 0.50 inches (57.9 x 36.8 x 12.7 mm)
Safety	UL60950-1 2 nd (Basic Insulation)
EMC (note 8)	EN50155 (EN50121-3-2) with External Filter
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Case Material	Aluminum Base Plate with Plastic Case
Weight	68 g

NOTE

- Measured from high line to low line.
- Measured from full load to zero load.
- Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
- Logic compatibility open collector ref to -Input

Module On	>3.5VDC to 75VDC or open circuit
Module Off	< 1.2VDC
- Suffix "N" to the model number with negative logic remote On/Off

Module On	< 1.2VDC
Module Off	>3.5VDC to 75VDC or open circuit
- Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
- An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.
- Design meet EN50155 and RIA12 refer to application note.

CHB150-110S SERIES

150 WATT, INPUT 66-160 VDC

RAILWAY

DC-DC CONVERTER

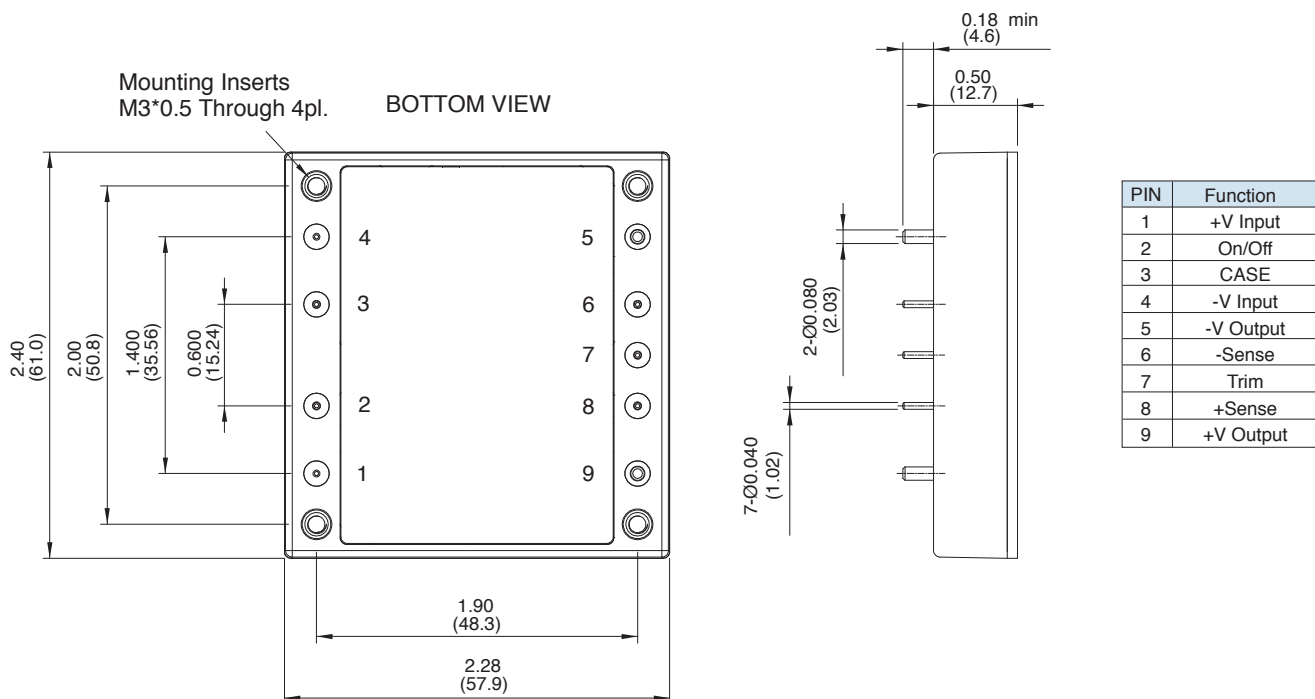
Features

- ◆ 150W Isolated Output
- ◆ Efficiency to 92.5%
- ◆ 200KHz Switching Frequency
- ◆ 3 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Over Temperature Protection
- ◆ Over Voltage/Current Protection
- ◆ Continuous Short Circuit Protection
- ◆ Half-Brick Size
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



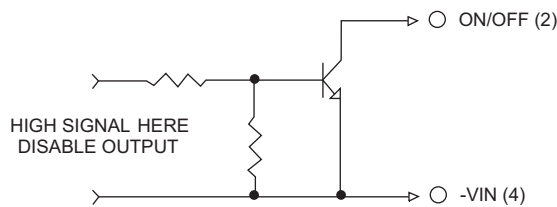
Mechanical Dimensions

All Dimensions in Inches (mm)
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25

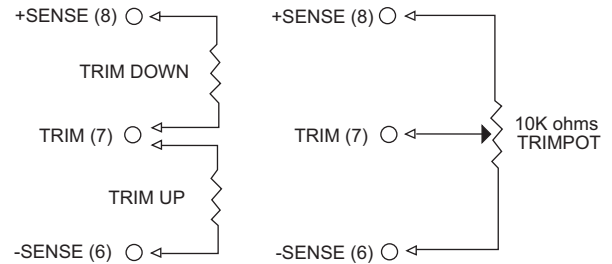


MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB150-110S05	66-160 VDC	5 VDC	0 mA	30 A	40 mA	1474 mA	92.5	10000µF
CHB150-110S12	66-160 VDC	12 VDC	0 mA	12.5 A	40 mA	1474 mA	92.5	5600µF
CHB150-110S24	66-160 VDC	24 VDC	0 mA	6.5 A	60 mA	1541 mA	92	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under Voltage Lockout	power up 62V power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref to -Input
Module On	> 3.5Vdc to 75Vdc or Open Circuit
Module Off	< 1.8Vdc
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	Error Band ±5% Vout Recover Time < 200µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-180% Nominal Output
Start up time	45ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min. Input/Case 2250VDC min. Output/Case 1500VDC min. 10 ⁷ ohm min.
Isolation Resistance	1000pF typ.
Isolation Capacitance	200KHz typ.
Switching Frequency	-40°C to 100°C
Operating Case Temperature	-55°C to +105°C
Storage Temperature	105°C typ.
Thermal Shutdown, Case Temp.	95% RH max. Non condensing
Humidity	CHB150-110S05: 240Khrs CHB150-110S12: 320Khrs CHB150-110S24: 320Khrs
MTBF.....MIL-HDBK-217F, GB, 25°C, Full Load	UL60950-1 2 nd (Basic Insulation) EN50155 (EN50121-3-2) with External Filter EN50155 (EN61373) EN50155 (EN60068-2-1) 2.28 x 2.40 x 0.50 inches (57.9 x 61.0 x 12.7 mm) Aluminum Baseplate with Plastic Case 90 g
Safety	
EMC (note 7)	
Shock/Vibration	
Environmental	
Dimensions	
Case Material	
Weight	

NOTE

- Measured from high line to low line.
- Measured from full load to zero load.
- Output ripple and noise measured with 10µF tantalum and 1µF ceramic apacitor across output.
- Suffix "N" to the model number with negative logic remote On/Off
Module On < 1.8VDC
Module Off > 3.5VDC to 75VDC or open circuit
- Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
- An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.
- Design meet EN50155 and RIA12 refer to application note.

CFB200-110S SERIES

200 WATT, INPUT 66-160 VDC

RAILWAY

DC-DC CONVERTER

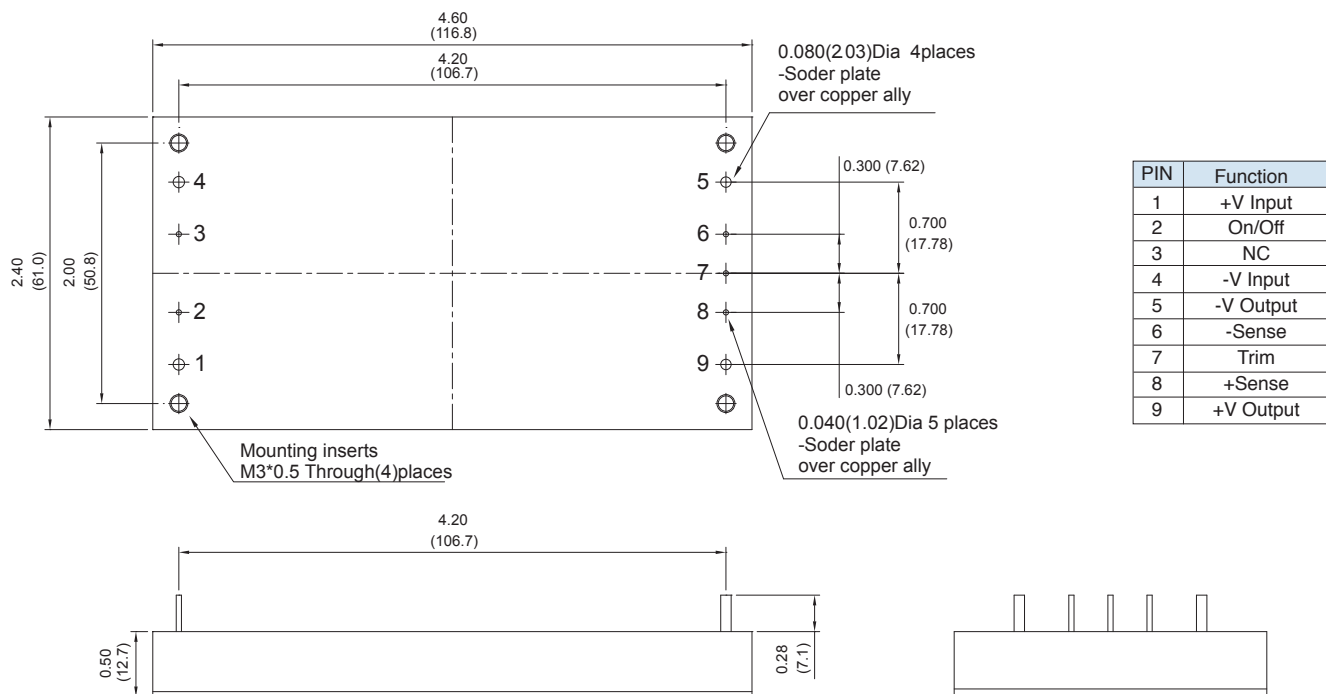
Features

- ◆ 200W Isolated Output
- ◆ Efficiency to 86%
- ◆ Low no load input power
- ◆ 3 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Remote On/Off
- ◆ Over Temperature Protection
- ◆ Over Voltage/Current Protection
- ◆ Continuous Short Circuit Protection
- ◆ Full Brick Size
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



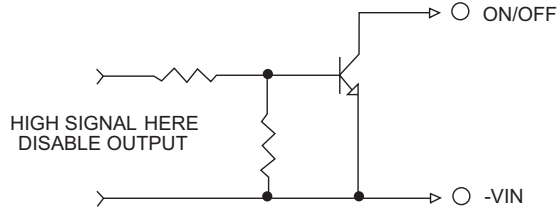
Mechanical Dimensions

All Dimensions in Inches (mm)
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25

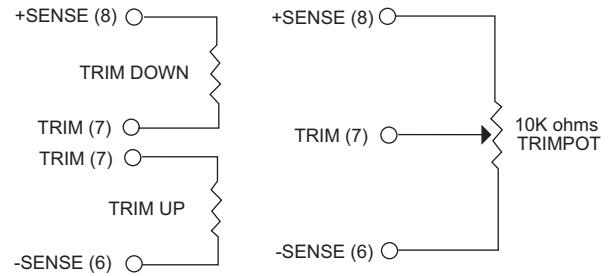


MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CFB200-110S12	66-160 VDC	12 VDC	0mA	16.6 A	25mA	2140mA	85	10000µF
CFB200-110S15	66-160 VDC	15 VDC	0mA	13.3 A	25mA	2114mA	86	4700µF
CFB200-110S24	66-160 VDC	24 VDC	0mA	8.3 A	25mA	2114mA	86	4700µF
CFB200-110S48	66-160 VDC	48 VDC	0mA	4.16 A	25mA	2114mA	86	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under voltage lockout	power up 62V power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref to -Input
Module On	Open Circuit
Module Off	< 1.8Vdc
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 500μs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
12V, 15V	60mV RMS, 150mVpk-pk max.
24V	100mV RMS, 240mVpk-pk max.
48V	200mV RMS, 480mVpk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-150% Nominal Output
Start up time	120ms typ.

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10μF tantalum and 1μF ceramic capacitor across output.
4. An external input capacitor 68μF for all models are recommended to reduce input ripple voltage.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 3000Vrms min. Input/Case 1500Vrms min. Output/Case 500Vrms min. 10 ⁹ ohm min.
Isolation Resistance	500pF typ.
Isolation Capacitance	250KHz typ.
Switching Frequency	-40°C to 100°C
Operating Case Temperature	-55°C to +105°C
Storage Temperature	105°C typ.
Thermal Shutdown, Case Temp.	95% RH max. Non condensing
Humidity	TBD
MTBF...MIL-HDBK-217F, GB, 25°C, Full Load	UL60950-1, EN50155
Safety	with external filter to meet
EMI	EN55022 Class A & Class B
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Dimensions	4.60 × 2.40 × 0.52 inches (116.8 × 61.0 × 13.2 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	220 g

CHB300W-110S SERIES

300 WATT, INPUT 43-160 VDC

RAILWAY

DC-DC CONVERTER

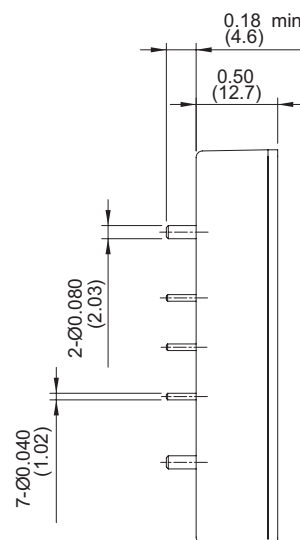
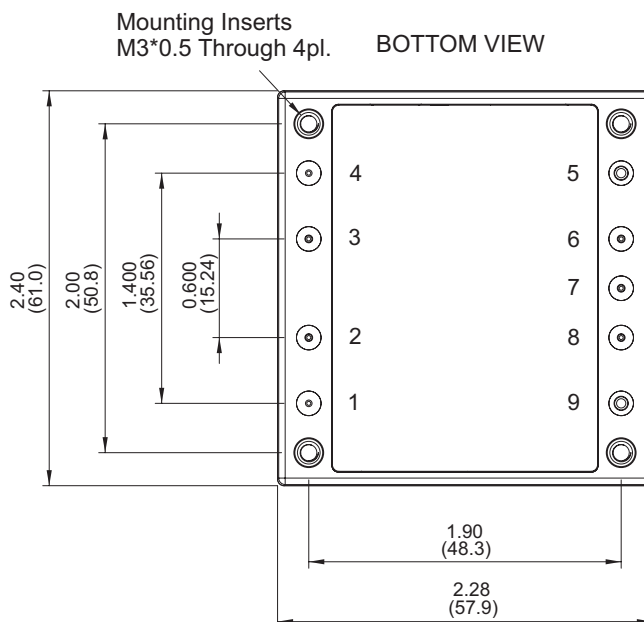
Features

- ◆ 300W Isolated Output
- ◆ Efficiency to 90%
- ◆ Fixed Switching Frequency
- ◆ 4 : 1 Input Range
- ◆ Regulated Outputs
- ◆ Input Under-Voltage Protection
- ◆ Over Temperature Protection
- ◆ Over Voltage/Current Protection
- ◆ Remote On/Off
- ◆ Low No Load Power Consumption
- ◆ Half-Brick Size
- ◆ Safety standard: UL 60950-1 2nd (basic insulation)
- ◆ EMC: EN 50155 (EN 50121-3-2), external filter required
- ◆ Shock & Vibration: EN 50155 (EN 61373)



Mechanical Dimensions

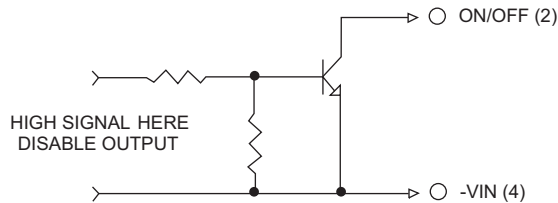
All Dimensions in Inches (mm)
 Tolerance Inches: X.XX=±0.02, X.XXX=±0.010
 Millimeters: X.X=±0.5, X.XX=±0.25



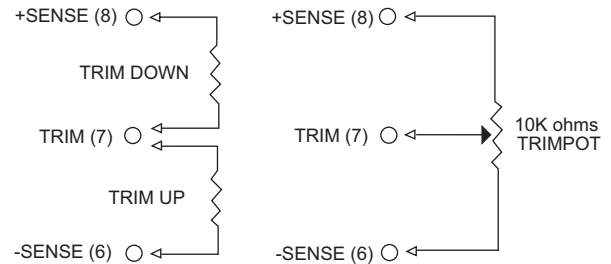
PIN	Function
1	+V Input
2	ON/OFF
3	NC
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB300W-110S05	43-160 VDC	5 VDC	0 mA	60 A	20 mA	3.1 A	89	2200μF
CHB300W-110S12	43-160 VDC	12 VDC	0 mA	25 A	20 mA	3.1 A	90	1000μF
CHB300W-110S24	43-160 VDC	24 VDC	0 mA	12.5 A	20 mA	3.1 A	89	560μF
CHB300W-110S28	43-160 VDC	28 VDC	0 mA	10.7 A	20 mA	3.1 A	89	470μF
CHB300W-110S48	43-160 VDC	48 VDC	0 mA	6.25 A	20 mA	3.1 A	89	220μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under Voltage Lockout	power up 42V power down 38V
Positive Logic Remote On/Off	see note 4 & 5
Logic Compatibility	Open Collector ref to -Input
Module On	> 3.5Vdc to 75Vdc or Open
Module Off	< 1.8Vdc
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	
Error Band	±5% Vout
Recover Time	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
5V	60mV RMS, 100mV pk-pk max.
12V	80mV RMS, 150mV pk-pk max.
24V	120mV RMS, 240mV pk-pk max.
28V	140mV RMS, 280mV pk-pk max.
48V	220mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	105%-40% Nominal Output

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output 2250VDC min. Input/Case 2250VDC min. Output/Case 2250VDC min.
Isolation Resistance	10 ⁷ ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	300KHz typ.
Operating Case Temperature	-40°C to 100°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temp.	105°C typ.
Humidity	95% RH max. Non condensing
Safety	UL60950-1 2 nd (Basic Insulation)
EMC (note 7)	EN50155 (EN50121-3-2) with External Filter EN50155 (EN61373) EN50155 (EN60068-2-1)
Shock/Vibration	2.28 x 2.40 x 0.52 inches (57.9 x 61.0 x 13.2 mm)
Environmental	
Dimensions	
Case Material	Aluminum Baseplate with Plastic Case

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility open collector ref to -input
Module On >3.5VDC to 75VDC or open circuit
Module Off < 1.2Vdc
5. Suffix "N" to the model number with negative logic remote On/Off
Module On < 1.2VDC
Module Off >3.5VDC to 75VDC or open circuit
6. An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.
7. Design meet EN50155 and RIA12 refer to application note.

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Product Type

Application

Output Voltages

Output Currents

Input Voltages

Efficiency

Isolation

Protection

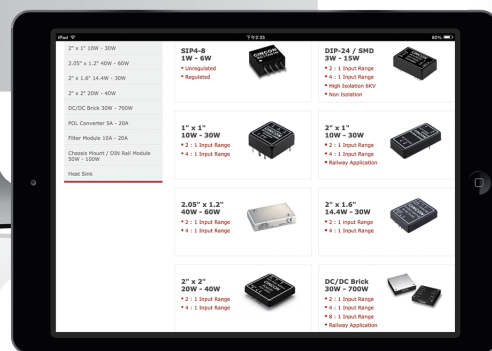
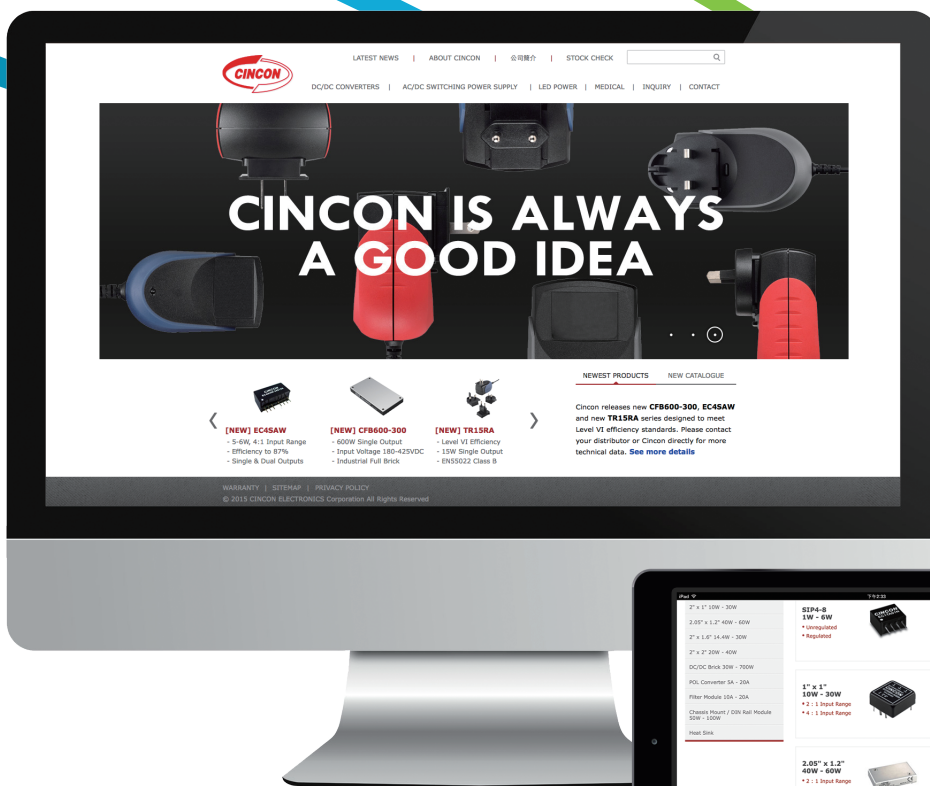
Storage / Operating Temperature Range

Safety Standard

EMC Standard

Mechanical Description

Remarks



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