

QHW050M, QHW075M, and QHW100M Power Modules: dc-dc Converters; 36 to 75 Vdc Input, 1.5 Vdc Output; 15 W to 30 W



The QHW Series Power Modules use advanced, surface-mount technology and deliver high-quality, efficient, and compact dc-dc conversion.

Applications

- Distributed power architectures
- Communications equipment
- Computer equipment

Options

- Heat sinks available for extended operation
- Auto-restart after overcurrent shutdown

Description

The QHW050M, QHW075M, and QHW100M Power Modules are dc-dc converters that operate over an input voltage range of 36 Vdc to 75 Vdc and provide a precisely regulated dc output. The outputs are fully isolated from the inputs, allowing versatile polarity configurations and grounding connections. The modules have maximum power ratings from 15 W to 30 W at a typical full-load efficiency of 80%.

The sealed modules offer a metal baseplate for excellent thermal performance. Threaded-through holes are provided to allow easy mounting or addition of a heat sink for high-temperature applications. The standard feature set includes remote sensing, output trim, and remote on/off for convenient flexibility in distributed power applications.

* ISO is a registered trademark of the International Organization for Standardization.

† UL is a registered trademark of Underwriters Laboratories, Inc.

‡ CSA is a registered trademark of Canadian Standards Assn.

§ VDE is a trademark of Verband Deutscher Elektrotechniker e.V.

** This product is intended for integration into end-use equipment. All the required procedures for CE marking of end-use equipment should be followed. (The CE mark is placed on selected products.)

Features

- Small size: 36.8 mm x 57.9 mm x 12.7 mm (1.45 in. x 2.28 in. x 0.50 in.)
- High power density
- High efficiency: 80% typical
- Low output noise
- Constant frequency
- Industry-standard pinout
- Metal baseplate
- 2:1 input voltage range
- Overvoltage and overcurrent protection
- Remote on/off
- Remote sense
- Adjustable output voltage
- Overtemperature protection
- ISO* 9001 Certified manufacturing facilities
- UL† 1950 Recognized, CSA‡ C22.2 No. 950-95 Certified, and VDE§ 0805 (EN60950, IEC950) Licensed
- CE mark meets 73/23/EEC and 93/68/EEC directives**

Electrical Specifications

Table 1. Output Specifications

Parameter	Device	Symbol	Min	Typ	Max	Unit
Output Voltage Set Point ($V_I = 48\text{ V}$; $I_O = I_{O, \text{max}}$; $T_C = 25\text{ }^\circ\text{C}$)	All	$V_{O, \text{set}}$	1.478	1.5	1.522	Vdc
Output Voltage (Over all operating input voltage, resistive load, and temperature conditions until end of life.)	All	V_O	1.45	—	1.55	Vdc
Output Regulation: Line ($V_I = 36\text{ V}$ to 75 V)	All	—	—	0.01	0.1	% V_O
Load ($I_O = I_{O, \text{min}}$ to $I_{O, \text{max}}$)	All	—	—	0.05	0.2	% V_O
Temperature ($T_C = -40\text{ }^\circ\text{C}$ to $+100\text{ }^\circ\text{C}$)	All	—	—	8	25	mV
Output Ripple and Noise Voltage: RMS	All	—	—	—	40	mVrms
Peak-to-peak (5 Hz to 20 MHz)	All	—	—	—	150	mVp-p
External Load Capacitance	All	—	0	—	*	μF
Output Current (At $I_O < I_{O, \text{min}}$, the modules may exceed output ripple specifications.)	QHW050M	I_O	0.5	—	10	A
	QHW075M	I_O	0.5	—	15	A
	QHW100M	I_O	0.5	—	20	A
Output Current-limit Inception ($V_O = 90\%$ of $V_{O, \text{nom}}$)	QHW050M	$I_{O, \text{cli}}$	—	12	†	A
	QHW075M	$I_{O, \text{cli}}$	—	18	†	A
	QHW100M	$I_{O, \text{cli}}$	—	24	†	A
Efficiency ($V_I = 48\text{ V}$; $I_O = I_{O, \text{max}}$; $T_C = 70\text{ }^\circ\text{C}$)	QHW050M	η	—	79	—	%
	QHW075M	η	—	80	—	%
	QHW100M	η	—	80	—	%
Switching Frequency	All	—	—	380	—	kHz
Dynamic Response ($\Delta I_O / \Delta t = 1\text{ A} / 10\text{ } \mu\text{s}$, $V_I = 48\text{ V}$, $T_C = 25\text{ }^\circ\text{C}$): Load Change from $I_O = 50\%$ to 75% of $I_{O, \text{max}}$: Peak Deviation	All	—	—	5	—	% $V_{O, \text{set}}$
Settling Time ($V_O < 10\%$ of peak deviation)	All	—	—	300	—	μs
Load Change from $I_O = 50\%$ to 25% of $I_{O, \text{max}}$: Peak Deviation	All	—	—	5	—	% $V_{O, \text{set}}$
Settling Time ($V_O < 10\%$ of peak deviation)	All	—	—	300	—	μs

* Consult your sales representative or the factory.

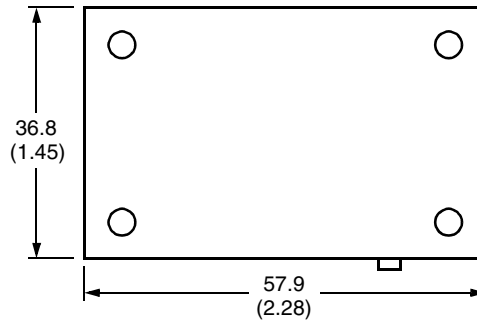
† These are manufacturing test limits. In some situations, results may differ.

Outline Diagram

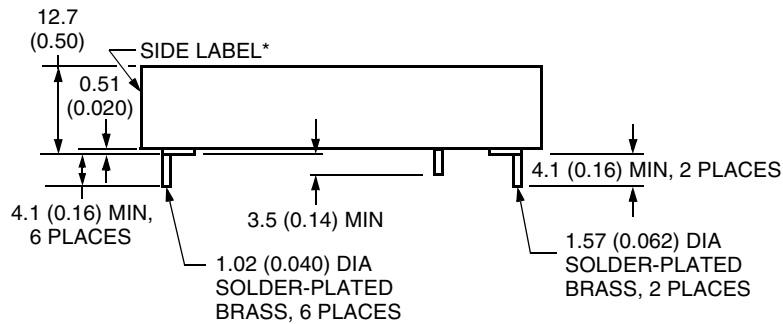
Dimensions are in millimeters and (inches).

Tolerances: x.x mm ± 0.5 mm (x.xx in. ± 0.02 in.)
 x.xx mm ± 0.25 mm (x.xxx in. ± 0.010 in.)

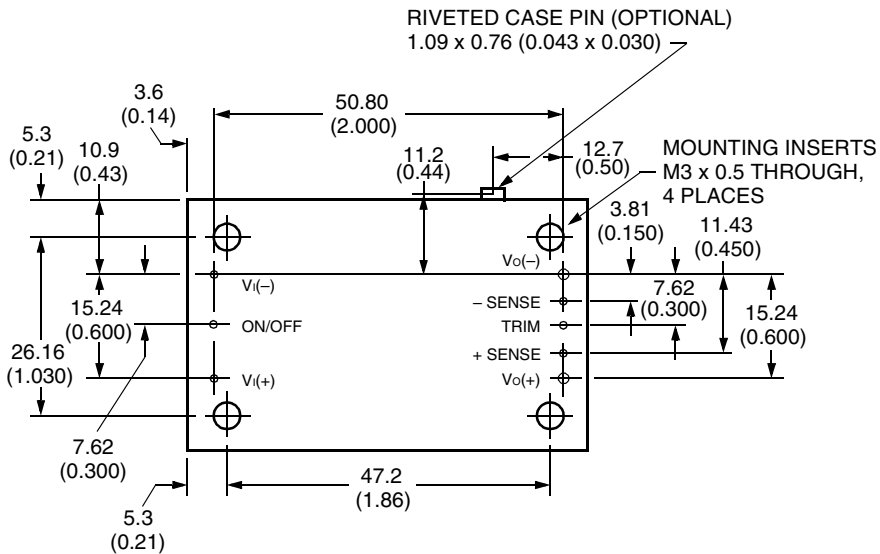
Top View



Side View



Bottom View



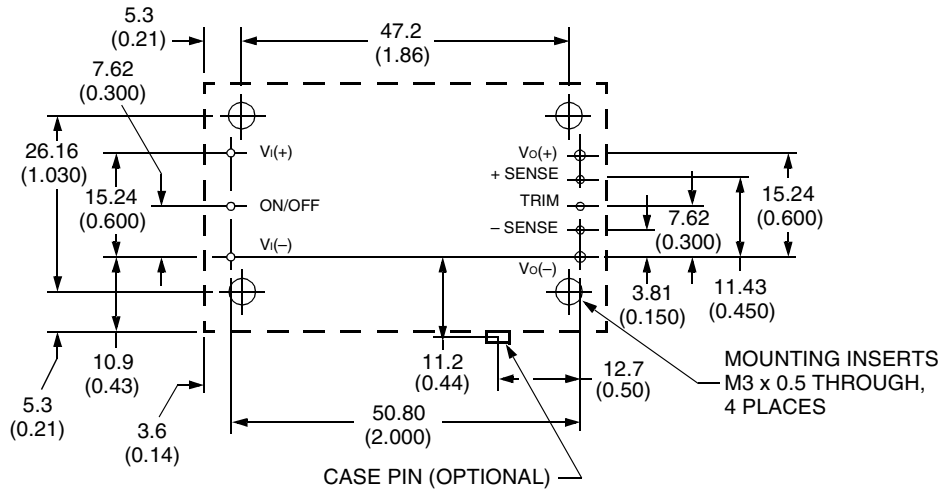
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* Side label includes Tyco name, product designation, safety agency markings, input/output voltage and current ratings, and bar code.

Recommended Hole Pattern

Component-side footprint.

Dimensions are in millimeters and (inches).



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Ordering Information

Table 2. Device Codes

Input Voltage	Output Voltage	Output Power	Remote On/Off Logic	Device Code	Comcode
48 V	1.5 V	15 W	Negative	QHW050M1	108750183
48 V	1.5 V	22.5 W	Negative	QHW075M1	108448150
48 V	1.5 V	30 W	Negative	QHW100M1	108448192

Optional features can be ordered using the suffixes shown in Table 3. The suffixes follow the last letter of the device code and are placed in descending order. For example, the device codes for a QHW100M module with the following options are shown below:

Negative logic	QHW100M1
Negative logic and auto-restart after overcurrent shutdown	QHW100M41

Table 3. Device Options

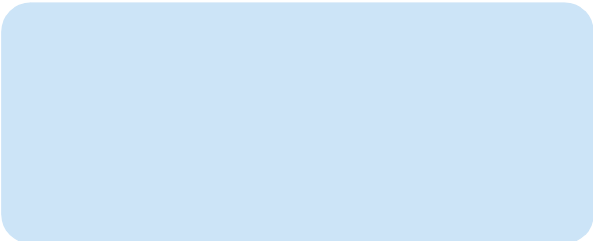
Option	Suffix
Auto-restart after overtemp or overcurrent shutdown	4
Negative remote on/off logic	1

Notes



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