

SPECIFICATIONS

Typical at Nominal 115/230VAC Line, Full Load and 25°C Unless Otherwise Noted.

OUTPUT SPECIFICATIONS

| | |
|--|-----------------------|
| Total Output Power, Continuous, Max | 1000 Watts |
| Voltage Adjustment Range, local or remote trim | See table |
| Total Regulation ¹ | 2.0% |
| Total Regulation, Standby Supply | 5.0% |
| Ripple & Noise, Pk-Pk ² | 1% or 50mV |
| Hold-up Time ³ | 20ms |
| Dynamic Response ⁴ | 300µs |
| Temperature Coefficient | ±0.02%/°C |
| Minimum Load | 0A |
| Overload Protection | Auto Recovery |
| Overvoltage Protection | Latched Shutdown |
| Remote Sense | Up to 0.25V Per Wire |
| Current Share, singles only | ±15% Full Load Rating |
| Standby Output | +5V, 100mA |
| DC Power Good Signal | Logic Low |
| AC Power Good Signal | Logic Low |
| Module Inhibit | Logic Low |
| Global Inhibit | Logic Low |
| Fans Good Signal | Logic Low |

INPUT SPECIFICATIONS

| | |
|---------------------------------|--------------------------|
| Input Voltage Range, 600 & 800W | 85-264VAC |
| 1000W | 180-264VAC |
| Power Factor | 0.99 |
| Input Frequency | 47-63Hz |
| Inrush Current Limiting | 30A Peak |
| Input EMI Filter | EN55022 Curve B |
| | FCC20780 pt. 15J Curve B |
| Harmonic Distortion | EN61000-3-2 |
| Input Current, 600W | 6.5A@115VAC, 3.2A@230VAC |
| 800W | 8.7A@115VAC, 4.3A@230VAC |
| 1000W | 5.4A@230VAC |

Input Immunity, Conducted

| | |
|----------------------------|----------------------------|
| Fast Transients, Line-Line | ±2kV (EN61000-4-4 Level 3) |
| Surges, Line-Line | ±2kV (EN61000-4-5 Level 3) |
| Surges, Line-Ground | ±4kV (EN61000-4-5 Level 4) |
| Input Protection | Internal Fuse, 15A |

GENERAL SPECIFICATIONS

| | |
|---------------------------------------|---|
| Efficiency ⁵ | 80% at Full Load |
| Isolation, Class I, min. ⁶ | |
| Input-Output | 3000VAC |
| Input-Ground | 1500VAC |
| Output-Ground | 500VDC |
| MTBF (Bellcore) | 200,000 Hours |
| Safety Standards | EN60950-1, UL1950-1, CSA22.2 No.60950-1 |

ENVIRONMENTAL SPECIFICATIONS

| | |
|-----------------------|----------------------------|
| Operating Temperature | -20°C to 70°C Ambient |
| Derating | 2.5% / °C, 50°C to 70°C |
| Storage Temperature | -40°C to +85°C |
| Cooling | Integral Ball Bearing Fans |

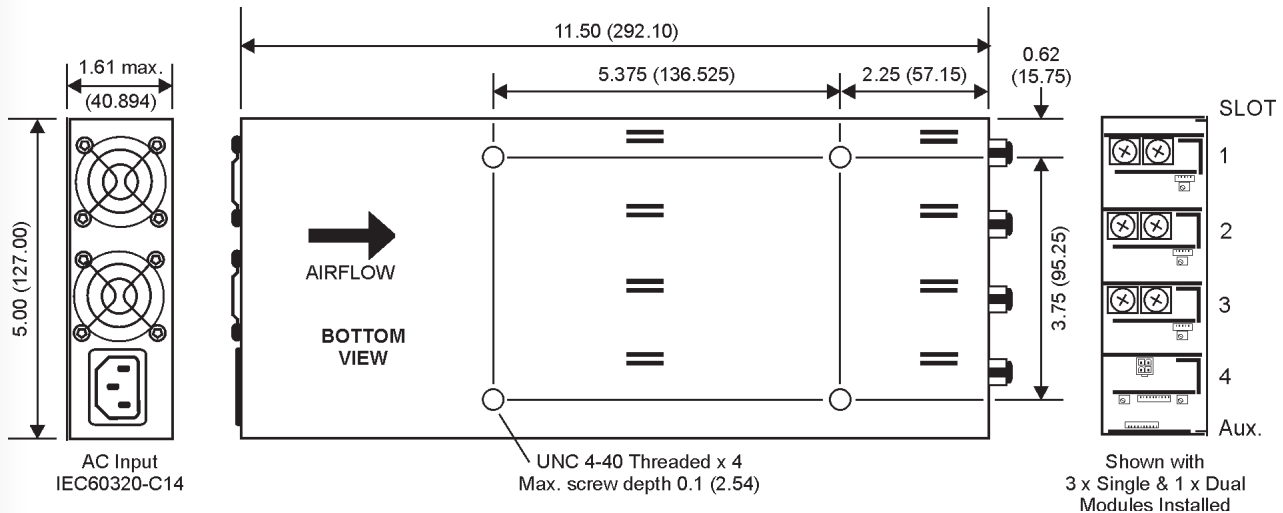
PHYSICAL SPECIFICATIONS

| | |
|------------------------|-------------------------|
| Case Material | Steel |
| Dimensions, Inches(mm) | 1.61 H x 5.0 W x 11.5 D |
| | (40.9 x 127 x 292) |
| Weight | 5.35 lbs. (2.4 kg.) |

NOTES:

1. No load to full load, including line regulation and load regulation.
2. Whichever is greater, 20MHz bandwidth. Measured with 0.1µF ceramic and 10µF tantalum capacitors in parallel across the output.
3. When output is set at approximately the midpoint of its range.
4. <5% deviation recovering to within 1% for 25% load change.
5. Typical efficiency for 4 output unit with one high current output of 5V or lower. Efficiency can vary 5% or more depending on combination of outputs.
6. Input-output isolation figure is for isolation components only. 100% production Hipot tested.

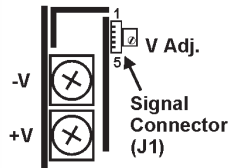
OUTLINE & DIMENSIONS



ALL DIMENSIONS NOMINAL IN INCHES (mm).

OUTPUT AND GLOBAL MODULE INTERFACE DETAIL

Single Output Module

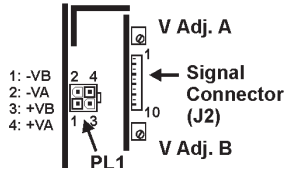


| Pin | Function |
|-----|------------|
| 1 | +ve Sense |
| 2 | - ve Sense |
| 3 | Trim |
| 4 | Share |
| 5 | Inhibit |

Mating Connector

Supplied as standard, pre-wired with cable length ~24"/610mm, one per installed module.
Pt. No. 319-1728-0000

Dual Output Module



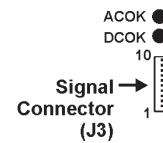
| Pin | Function - VA | Pin | Function - VB |
|-----|---------------|-----|---------------|
| 1 | +ve Sense | 6 | - |
| 2 | - ve Sense | 7 | +ve Sense |
| 3 | Trim | 8 | - ve Sense |
| 4 | Inhibit | 9 | Trim |
| 5 | - | 10 | Inhibit |

Mating Connectors

Signal: Supplied as standard, pre-wired with cable length ~24"/610mm, one per installed module. Pt. No. 319-1728-0010

Power: Supplied as standard.
Housing: Molex 39-01-2045 x 1
Crimps: Molex 44476-3112 x 4
Wire Size: 16AWG

Global Module



| Pin | Function | Pin | Function |
|-----|-----------------------------|-----|-------------------------|
| 1 | Global Inhibit ² | 6 | GA1 |
| 2 | AC Good ² | 7 | SDA |
| 3 | DC Good ² | 8 | 5V Standby ¹ |
| 4 | Fan Good ² | 9 | 5V Return |
| 5 | GA0 | 10 | SCL |

Mating Connector

Supplied as standard pre-wired with cable length ~24"/610mm. Pt. No. 319-1728-0010

Notes:

1. 5V Standby Output is rated at 100mA.
2. Referenced to 5V Return with internal pullup to 5V Standby.

DESCRIPTION OF CONTROL AND SUPERVISORY SIGNALS

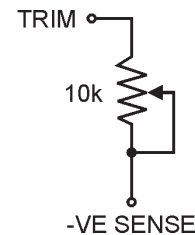
OUTPUT MODULES

| SIGNAL | DESCRIPTION |
|-------------------------|--|
| +ve Sense - ve Sense | Remote sense will compensate for a voltage drop of up to 0.25V per load wire, 0.5V total when connected to the +ve and -ve outputs at the load respectively. If remote sense is not required, the sense leads may be left open for local sensing at the output terminals. |
| Trim | The output voltage can be adjusted down from the the initial set point using the external circuit shown to the right. |
| Inhibit | A short circuit to -ve sense will inhibit the specific output. |

GLOBAL MODULE

| SIGNAL | DESCRIPTION |
|----------------|--|
| Global Inhibit | A short circuit to 5V Return, pin 9, will inhibit all outputs. |
| AC Good | Active LO indicates that the AC supply is present and the PFC Front-End is running. |
| DC Good | Active LO indicates that all DC outputs are enabled and within tolerance. |
| Fan Good | Active LO indicates that the fans are operating correctly. |
| GA0 / GA1 | I ² C address. Connect to either 5V Return or 5V Standby via 100 Ohm resistor. (GA2 is internally hard-wired to 5V Return.) |
| SDA | I ² C Serial Data. A pull-up resistor to 5V Standby in the range 3k to 10k is required for correct operation. |
| SCL * | I ² C Serial Clock. A pull-up resistor to 5V Standby in the range 3k to 10k is required for correct operation. |

External Trim Down Circuit



For alternative trim methods please consult the factory.

*** I²C BUS SPEED**

The I²C serial bus employed in the QuiQPLUS is designed to operate with a serial clock speed of 100kHz.

I²C SERIAL BUS INTERFACE

DESCRIPTION

The integral I²C serial bus includes a digital register which allows the user to monitor the status of several parameters within the unit and transmit these to a host computer on demand. An on-board EEPROM containing specific data about each unit allows for remote inventory control. A Global Output Inhibit function is also provided via this I²C interface.

DIGITAL FUNCTION

Digital status and control functions are provided by a PCF8574 8-bit I/O port devices manufactured by Philips. When this device is read by the I²C controller a single 8-bit word provides the following information:

| BIT | FUNCTION | GOOD STATE | MEANING |
|-----|----------------|------------|---|
| 0 | Not Used | 0 | - |
| 1 | DC Good | 1 | All outputs are within specified limits. |
| 2 | Temp. Warning | 0 | A "1" indicates excessive internal Temperature. |
| 3 | Fan #1 Good | 1 | Fan running at >80% low speed setting. |
| 4 | Fan #2 Good | 1 | Fan running at >80% low speed setting. |
| 5 | Not Used | 1 | - |
| 6 | Global Inhibit | 1 | Writing "0" inhibits all outputs. |
| 7 | Inhibit Sense | 1 | A "0" indicates the unit is inhibited due to: Over Temperature, OVP or an active Inhibit. |

EEPROM FUNCTION

The EEPROM is a 256 byte device type 24C02 produced by ST which is preprogrammed at the final configuration centre with the following data:

| ADDRESS RANGE | DATA |
|---------------|------------------------|
| 0-63 | Model Number |
| 64-79 | Serial Number |
| 80-95 | Revision Level |
| 96-111 | Manufacturer |
| 112-127 | Country of Manufacture |
| 128-255 | Free for customer use |

PCF8574 Slave Address

| BIT | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------|---|---|---|---|-------|----|----|-----|
| VALUE | 0 | 1 | 0 | 0 | A2(0) | A1 | A0 | R/W |

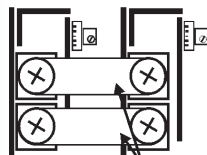
EEPROM Slave Address

| BIT | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
|-------|---|---|---|---|-------|----|----|-----|
| VALUE | 1 | 0 | 1 | 0 | A2(0) | A1 | A0 | R/W |

For detailed information about the operation of the I²C devices please consult the original manufacturers' data.

Paralled Modules (code 2P, 3P or 4P)

Parallel (code 2P)



Link Bars

Notes on parallel module configurations.

When 2 or more single output modules are configured in parallel the link bars shown above are factory fitted between the output terminals of the modules concerned.

When two modules are configured in parallel this is identified in the model number by a 2P code suffixed to the module code. Similarly, for three modules the code is 3P and for four modules the code is 4P.

DETAILED CONFIGURATION GUIDE

When configuring a **QuiQPLUS™** power module to a specific requirement we recommend use of the automated configurator which is available as an Excel spreadsheet application. The following guide will assist with configuring a unit manually.

1. For each desired output select the module or combination of modules that most closely meets the requirement. Then code the module or module combination to include the desired set-point voltage to the nearest 100mV and prefix the module code with this voltage.

Example A: 3.2V @ 65A requires one **BH** module and is coded **3.2BH**.

Example B: 5.2V @ 95A requires two **BH** modules in parallel and is coded **5.2BH2P**. (N.B.) This code includes the module linking bars shown in the illustration to the left.

2. Once all desired output modules have been selected the complete model number is configured in ascending output voltage order from left to right when viewed from the end facing the output terminals starting with single output modules and then dual output modules.

Example A - 3.2V @ 65A, 5.2V @ 95A, 12.4V @ 3A & 12.4V @ 3A totalling 776W is coded:
QM-3.2BH-5.2BH2P-12.4C12.4C

In this example a dual output module is used for the two 12.4V outputs. Note that each half of the module code **CC** is prefixed with the required set-point voltage.

Example B - 3.3V @ 110A, 5.1V @ 45A, 18.0V @ 2A & 24.0V @ 1A totalling 653W is coded:
QM-3.3BH2P-5.1BH-18.0D24.0D

Note that single output modules must be selected in preference to dual output modules.