# CCH400-600 Series

**Specifications**

**Input**
- **Input Voltage**: 90-264 VAC
- **Input Frequency**: 47-400 Hz
- **Input Current**: CCH400: 4.3/2.1 A typ. at 115/230 VAC, CCH600: 6.3/3.1 A typ. at 115/230 VAC, full load
- **Inrush Current**: 60 A max at 230 VAC, 25 °C cold start
- **Power Factor**: >0.9
- **Earth Leakage Current**: 0.7/1.1 mA at 115/230 VAC at 60/50 Hz
- **Input Protection**: Internal F10 A/250 V fuse

**Output**
- **Output Voltage**: 12-48 VDC
- **Output Voltage Trim**: ±10%
- **Initial Set Accuracy**: ±1% V1, ±3% V2
- **Minimum Load**: No minimum load required
- **Start Up Delay**: Typically 1 s
- **Start Up Rise Time**: 50 ms typical
- **Hold Up Time**: 20 ms min
- **Drift**: ±0.2% after 20 min warm up
- **Line Regulation**: ±0.5% max
- **Load Regulation**: ±1% V1, ±5% V2 max
- **Over/Undershoot**: 1% typical
- **Transient Response**: 4% max. deviation, recovery to within 1% in 500 μs for a 50-75-50% load change
- **Ripple & Noise**: Typically 1% pk-pk V1, V2 2%, 20 MHz bandwidth
- **Overvoltage Protection**: 110-140% Vnom, recycle input to reset
- **Overload Protection**: 105-140% V1 only
- **Short Circuit Protection**: Continuous, approximately constant current
- **Temperature Coefficient**: ±0.05%/°C
- **Overtemp. Protection**: Fitted
- **Remote Sense**: Compensates for 0.5 V total voltage drop
- **Remote On/Off**: Uncommitted isolated optocoupler diode, powered diode inhibits V1

**General**
- **Efficiency**: 89% typical
- **Isolation**: 3000 VAC Input to Output, 1500 VAC Input to Ground, 500 VDC Output to Ground
- **Switching Frequency**: 30-333 kHz PFC, 51.1 kHz main and 138 kHz standby converter
- **Signals**: Power Fail, Inhibit, Current Share, Overtemperature Warning and 5 V Standby
- **MTBF**: 300 kHrs to MIL-HDBK-217F at 25 °C, GB

**Environmental**
- **Operating Temperature**: -40 °C to +85 °C baseplate, see thermal considerations
- **Cooling**: Baseplate, conduction cooling
- **Operating Humidity**: 95% RH, non-condensing
- **Storage Temperature**: -40 °C to +85 °C
- **Operating Altitude**: 3000 m
- **Shock**: MIL-STD 810F Clause 516.5 proc 1
- **Vibration**: MIL-STD 810F figure 514.5C -17

**EMC & Safety**
- **Low Voltage PSU EMC Emissions**: EN61204-3, high severity level
- **Harmonic Currents**: EN55022 level B conducted, level A radiated, MIL-STD 461D-F, CE102
- **Voltage Flicker**: EN61000-3-2, class A
- **Radiated Immunity**: EN61000-4-3, level 3 Perf Criteria A
- **EFT/Burst**: EN61000-4-4, level 3 Perf Criteria A
- **Surge**: EN61000-4-5, installation class 3 Perf Criteria A
- **Conducted Immunity**: EN61000-4-6, level 3 Perf Criteria A, MIL-STD 461 CS114
- **Dips & Interruptions**: EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B
- **Safety Approvals**: IEC60950-1 CB report, UL60950-1, TUV EN60950-1
- **Equipment Protection Class**: Class I

**Notes**
1. Safety approvals cover frequency 47-63 Hz.
**Models and Ratings**

<table>
<thead>
<tr>
<th>Output Power</th>
<th>Output Voltage V1</th>
<th>Output Current V1</th>
<th>Standby Supply V2</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>411 W</td>
<td>12.0 VDC</td>
<td>34.0 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH400P12</td>
</tr>
<tr>
<td>411 W</td>
<td>24.0 VDC</td>
<td>17.0 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH400P24</td>
</tr>
<tr>
<td>409 W</td>
<td>28.0 VDC</td>
<td>14.5 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH400P28</td>
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<tr>
<td>411 W</td>
<td>48.0 VDC</td>
<td>8.5 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH400P48</td>
</tr>
<tr>
<td>603 W</td>
<td>12.0 VDC</td>
<td>50.0 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH600P12</td>
</tr>
<tr>
<td>603 W</td>
<td>24.0 VDC</td>
<td>25.0 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH600P24</td>
</tr>
<tr>
<td>605 W</td>
<td>28.0 VDC</td>
<td>21.5 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH600P28</td>
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<tr>
<td>603 W</td>
<td>48.0 VDC</td>
<td>12.5 A</td>
<td>5.0 V/0.5 A</td>
<td>CCH600P48</td>
</tr>
</tbody>
</table>

**Mechanical Details**

**Signal Connector**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current Share</td>
</tr>
<tr>
<td>2</td>
<td>Inhibit</td>
</tr>
<tr>
<td>3</td>
<td>Overtemp. Warning</td>
</tr>
<tr>
<td>4</td>
<td>Power Fail</td>
</tr>
<tr>
<td>5</td>
<td>+Sense</td>
</tr>
<tr>
<td>6</td>
<td>-Sense</td>
</tr>
<tr>
<td>7</td>
<td>-Standby</td>
</tr>
<tr>
<td>8</td>
<td>+Standby</td>
</tr>
<tr>
<td>9</td>
<td>-Standby</td>
</tr>
<tr>
<td>10</td>
<td>+Standby</td>
</tr>
</tbody>
</table>

Connector: 10 WAY 2mm pitch p/n MOLEX 87833-1031
Mating half: p/n MOLEX 51110-1056
Contact: p/n MOLEX 50394-8100

**Input Connector**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Earth</td>
</tr>
<tr>
<td>2</td>
<td>Neutral</td>
</tr>
<tr>
<td>3</td>
<td>Line</td>
</tr>
</tbody>
</table>

Connector: 3 way AMP/Tyco type MATE-N-LOK 1-350943-0
Mates with MATE-N-LOK 350766-1

**Notes**

1. All dimensions in inches (mm).
2. Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
3. Weight 3.3 lbs (1.5 kg)
4. Connector kit available, order part no. ‘CCH CONKIT’
5. Inhibit, overtemperature and power fail are referenced to the OV power terminal.

**Thermal Considerations**

The baseplate must be maintained at or below 85 °C and therefore a suitable heatsink must be selected to remove the heat from the power supply. Details of the heatsink calculations and other considerations can be found in the longform datasheet.