FCL H SERIES - THREE PHASE - 6 to 200 kVA

THE UNIVERSAL AC POWER SOURCE
IDEAL FOR USE IN TESTING CENTRES, RESEARCH LABS AND TESTING ON PRODUCTION LINES

FCL Series Three Phase Static Variable Voltage and Frequency Converters utilise the latest in solid state Pulse Width Modulated (PWM) Inverter and Rectifier technology, combined with Galvanic Isolation, to deliver a clean and regulated variable AC power supply - ideal for use in civil testing centres, research laboratories and for testing on production lines.

Ashley-Edison FCL Series Variable AC Voltage & Frequency Converters offer -

- Ability to replicate all the numerous nominal utility mains three phase voltages (eg. 190/100V to 600/346V) and civil Frequencies 40 to 70 Hz (40 to 499 Hz Special Build Option for Military, Avionic and Marine applications) deployed throughout the world
- Suitable for use with Resistive, Capacitive, Inductive and Non-Linear Loads
- Galvanically Isolated with Pure & Stable Sine Wave Output delivering minimal harmonic distortion (EMI/EMC)
- Selectable High or Low Current Output Voltage Ranges
- High Overload Capability
- PWM / IGBT design ensures High Efficiency and Low Noise whilst delivering Maximum Reliability
- Uncomplicated and simple to use set-up and operation
- Easy to read LED Digital Metering displaying Output Frequency, Voltage, Current and Loading - eliminating the need for external monitoring

TYPICAL APPLICATIONS
- Test Laboratory & Research Centre
- Electrical & Electronic Equipment Testing
- Production & Process Control Systems
- Airport Grounding Equipment
- Military Diagnostic Systems
- Communication, Avionics & Marine Equipment
A FCL Series Variable AC Voltage & Frequency Converter takes the electrical input power at one frequency and voltage and provides an adjustable output voltage and frequency - ideal for testing loads over their full voltage and frequency range.

By design the incoming AC Mains Utility supply is converted by a rectifier into DC. The DC is then fed into an Inverter which produces the required AC output power. The resulting stable and pure sinewave is then passed though a low distortion linear amplifier to achieve the required high power output rating. By utilising crystal oscillation the availability of enhanced frequency stability is ensured.

Solid State in basic design, the only moving parts are the fans used to force cool the system.

## INPUT VOLTAGE CHOICES AVAILABLE

### 4 WIRE SOLUTIONS

**THREE PHASE WITH NEUTRAL (+ GROUND / EARTH)**

**H SERIES**
- **6 to 200 kVA**
- **High Voltage Models:** 380/220V, 400/230V or 415/240V
- **X486 Models:** 440/254V, 460/265V or 480/277V

**LY SERIES**
- **6 to 200 kVA**
- **Low Voltage Models:** 190/110V, 200/115V, 208/120V or 220/127V

Other voltages available on individual request / quotation.

**H-X486 SERIES**
- **6 to 200 kVA**
- **High Voltage Models:** 380/220V, 400/230V or 415/240V
- **X486 Models:** 440/254V, 460/265V or 480/277V

Other voltages available on individual request / quotation.

## INPUT & OUTPUT VOLTAGE & FREQUENCY SETTINGS

### H SERIES

**INPUT**
- Nominal Three Phase Input Voltage & Frequency
- Input Voltage Window - S10

**OUTPUT**
- Available Output Voltages
- Selectable High or Low Current Output Voltage Ranges
- Output Voltage Accuracy ± % of Output
- Programmable Output Frequency
- Output Frequency Accuracy ± % of Output

**HIGH LEVEL**
- 0/0V to 520/300V *
  - High Level
  - Low Level
  - ± 1%
  - 40 to 70 Hz (40 to 499 Hz Special Option)
  - ± 0.01%

**LOW LEVEL**
- 0/0V to 520/300V *
  - High Level
  - Low Level
  - ± 1%
  - 40 to 70 Hz (40 to 499 Hz Special Option)
  - ± 0.01%

### H-X486 SERIES

**INPUT**
- Nominal Three Phase Input Voltage & Frequency
- Input Voltage Window - S10

**OUTPUT**
- Available Output Voltages
- Selectable High or Low Current Output Voltage Ranges
- Output Voltage Accuracy ± % of Output
- Programmable Output Frequency
- Output Frequency Accuracy ± % of Output

**HIGH LEVEL**
- 0/0V to 600/346V
  - High Level
  - Low Level
  - ± 1%
  - 40 to 70 Hz (40 to 499 Hz Special Option)
  - ± 0.01%

**LOW LEVEL**
- 0/0V to 600/346V
  - High Level
  - Low Level
  - ± 1%
  - 40 to 70 Hz (40 to 499 Hz Special Option)
  - ± 0.01%
**FCL H SERIES - THREE PHASE - 6 to 200 kVA**

### DIGITAL DISPLAY PANEL

<table>
<thead>
<tr>
<th>Frequency Hz</th>
<th>Voltage V</th>
<th>Output Amps</th>
<th>Output Watt</th>
</tr>
</thead>
<tbody>
<tr>
<td>60.0</td>
<td>220.0</td>
<td>464.6</td>
<td>102.2</td>
</tr>
</tbody>
</table>

**FCL Series**

Three Phase Static Variable Voltage & Frequency Converter

### PRODUCT SELECTION TABLE

**H SERIES & H-X468 SERIES**

<table>
<thead>
<tr>
<th>Ashley-Edison Model No.</th>
<th>Power Rating</th>
<th>Power Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add Suffix – X440 for 440V Input, X460 for 480V &amp; X480 for 480V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Power Rating (kVA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCL-6H-3P-S10</td>
<td>6 kVA (4.8 kW)</td>
</tr>
<tr>
<td>FCL-10H-3P-S10</td>
<td>10 kVA (8 kW)</td>
</tr>
<tr>
<td>FCL-15H-3P-S10</td>
<td>15 kVA (12 kW)</td>
</tr>
<tr>
<td>FCL-20H-3P-S10</td>
<td>20 kVA (16 kW)</td>
</tr>
<tr>
<td>FCL-30H-3P-S10</td>
<td>30 kVA (24 kW)</td>
</tr>
<tr>
<td>FCL-45H-3P-S10</td>
<td>45 kVA (36 kW)</td>
</tr>
<tr>
<td>FCL-60H-3P-S10</td>
<td>60 kVA (48 kW)</td>
</tr>
<tr>
<td>FCL-75H-3P-S10</td>
<td>75 kVA (60 kW)</td>
</tr>
<tr>
<td>FCL-100H-3P-S10</td>
<td>100 kVA (80 kW)</td>
</tr>
<tr>
<td>FCL-120H-3P-S10</td>
<td>120 kVA (96 kW)</td>
</tr>
<tr>
<td>FCL-150H-3P-S10</td>
<td>150 kVA (120 kW)</td>
</tr>
<tr>
<td>FCL-200H-3P-S10</td>
<td>200 kVA (160 kW)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Max. Current for Selectable High or Low Current Output Voltage Ranges</th>
<th>Physical Size &amp; Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>8.3</td>
<td>16.6</td>
</tr>
<tr>
<td>13.9</td>
<td>27.8</td>
</tr>
<tr>
<td>20.9</td>
<td>41.8</td>
</tr>
<tr>
<td>27.8</td>
<td>55.6</td>
</tr>
<tr>
<td>41.7</td>
<td>83.4</td>
</tr>
<tr>
<td>62.6</td>
<td>125.2</td>
</tr>
<tr>
<td>83.4</td>
<td>166.8</td>
</tr>
<tr>
<td>104.3</td>
<td>208.6</td>
</tr>
<tr>
<td>139.1</td>
<td>278.2</td>
</tr>
<tr>
<td>166.9</td>
<td>333.8</td>
</tr>
<tr>
<td>208.6</td>
<td>416.2</td>
</tr>
<tr>
<td>278.2</td>
<td>556.4</td>
</tr>
</tbody>
</table>

**Note:**
1. Larger kVA and alternative voltage options available to order / individual request.
2. X468 Model Sizing & Weights may vary - subject to confirmation at time of ordering.

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## TECHNICAL SPECIFICATION

### General:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Three Phase, 4 Wire (3P+Neutral+G/E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley-Edison Models</td>
<td>FCL-6H-3P-S10 to FCL-200H-3P-S10</td>
</tr>
<tr>
<td>Power Ratings</td>
<td>12 Model Ratings- 6kVA (4kW), 10kVA (8kW), 15kVA (12kW), 20kVA (16kW), 30kVA (24kW), 45kVA (36kW), 60kVA (48kW), 75kVA (60kW), 100kVA (80kW), 120kVA (96kW), 150kVA (120kW) &amp; 200kVA (160kW)</td>
</tr>
<tr>
<td>Design Topology</td>
<td>Static—IGBT/ Pulse Width Modulated (PWM)</td>
</tr>
</tbody>
</table>

### Input:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>H Series</th>
<th>380/220V - 400/230V - 415/240V ±10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-X468 Models</td>
<td>440/256V - 460/265V - 480/277V ±10%</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>47 to 63Hz ±5% (400Hz Option)</td>
<td></td>
</tr>
</tbody>
</table>

### Output:

<table>
<thead>
<tr>
<th>Selectable High or Low Current</th>
<th>H Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage Ranges</td>
<td>High Voltage - 0 to 300V (Option 0 to 346V*)</td>
</tr>
<tr>
<td>Line to Neutral Voltages</td>
<td>Low Voltage - 0 to 150V (Option 0 to 173V*)</td>
</tr>
<tr>
<td>H-X468 Models</td>
<td>High Voltage - 0 to 346V</td>
</tr>
<tr>
<td>* = to specific order</td>
<td>Low Voltage - 0 to 173V</td>
</tr>
<tr>
<td>Voltage Regulation</td>
<td>±1%</td>
</tr>
<tr>
<td>Frequency</td>
<td>40 to 70 Hz (Programmable Key Lock Setting) (Extendable to 899 Hz as a special build option)</td>
</tr>
<tr>
<td>Frequency Stability</td>
<td>±0.01%</td>
</tr>
<tr>
<td>Power Factor</td>
<td>0.8 Power Factor</td>
</tr>
<tr>
<td>Digital Metering:</td>
<td>4 Digit LED Digital Display - Resolution 0.1Hz/Step</td>
</tr>
<tr>
<td>Frequency (Hz)</td>
<td>4 Digit LED Digital Display - Resolution 0.1 Volt</td>
</tr>
<tr>
<td>Voltage (Volts)</td>
<td>4 Digit LED Digital Display - Resolution 0.1 Amp</td>
</tr>
<tr>
<td>Current (Amps)</td>
<td>4 Digit LED Digital Display - Resolution 0.1 Watt</td>
</tr>
<tr>
<td>Loading (Watts)</td>
<td>4 Digit LED Digital Display</td>
</tr>
</tbody>
</table>

### Protection Features:

- Electronic Circuit/Circuit Breaker, Overload Warning, Over Temperature, Short Circuit and Auto-Power Off
- As Standard

### Environmental:

- Operating Temperature Range: Temperature range –15 to 45 °C. Derate by 2% for each additional °C Up to max 60 °C .
- Maximum Altitude: Maximum altitude 4000m. Derate by 2.5% for each additional 500m.
- Relative Humidity: Suitable for indoor tropical use 90% RH (non-condensing).
- Efficiency: ≥94%
- THD - Harmonic Distortion: Pure Sinewave 52%
- Audible Noise: <60 dB (at 1 metre)

### Physical:

- Construction: Enclosures to IP20 (NEMA 1 Style) - BS EN 60529
- Colour: RAL 7032 (Pebble Grey - Epoxy Powder Coating)
- Dimensions & Weights: See Product Selection Table

### Certification & Conformance:

- EMC Conformance: Complies with BS EN 55022 and the relevant parts of the BS EN 61000 series of standards

### Warranty:

- Standard Warranty: 1 Year / 12 Months from date of supply
- Extended Warranty: Option - Extendable Warranty up to 60 Months / 5 Years

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TYPICAL APPLICATIONS

Our FCL Series Variable Voltage and Frequency Converters are typically utilised in -

- Research & Design
  - New product design brings certain challenges for manufacturers today as the world marketplace presents a wide variety of AC power forms. In addition to the many variations of power, the stability of that power may not always be consistent from one locality to another.
  - Whether you want consistent precision power from day to day or need to simulate a wide variety of power line disturbances, Ashley-Edison can work with you to define your AC power solution.

- Manufacturing Testing
  - Often products are used at a different voltage and frequency from the country in which they are produced. This creates a need to convert both voltage and frequency on a production line.
  - Ashley-Edison products are used worldwide to supply the voltage and frequency needed by any given product requiring AC Power. Stable voltage and frequency are also required to minimize the rejection of a product due to poor power conditions in a factory. Our products provide a stable output while the input voltage or frequency may vary. This provides the assurance that a product did not fail due to a low-voltage line in your facility.

- Military
  - From field use, to shipboard applications, to laboratory environments, Ashley-Edison’s military customers benefit from the high quality, rugged designs of its standard Variable AC Voltage and Frequency Converters.
  - Our products can be found powering sensitive electronic equipment in a wide variety of military applications and environments.

- Avionics
  - As aircraft electronics continue to evolve, so do their power requirements.
  - At Ashley-Edison we are able to replicate the environments required to test for compliance with aerospace test requirements. Varying frequency and voltage, we can provide a great amount of control and simulation of the AC power on an aircraft.

AVAILABILITY

We offer probably the best availability on AC Voltage Stabiliser & Power Conditioning solutions.

Many of our most popular ratings are readily available from stock at the factory or from one of our strategically located Service and Distribution Hubs. Where a solution is not readily available, due to our considerable investment in component inventory and fine-tuned accredited build processes, we are able to ensure very short lead times on deliveries – even for the largest of models!

NEED HELP SELECTING THE RIGHT MODEL FOR YOUR NEEDS?
Check out our Online Selection Tool at http://www.AshleyEdison.com/Selector

CUSTOM BUILT SOLUTIONS

Ashley-Edison, with a strong and wide manufacturing base, is able to meet the requirements of customers from our own in-house professional resources.

Where bespoke / custom built solutions are required we are able to call upon our extensive portfolio of proven standard designs and tailor offerings to accommodate, without breaking the bank, most individual specific requirements.