FCL H SERIES - THREE PHASE - 6 to 400 kVA

STATIC VARIABLE AC VOLTAGE & FREQUENCY CONVERTERS

AC THREE PHASE
6 TO 400 kVA

IGBT SOLID STATE PWM DESIGN

H SERIES MODELS

INPUT: 380/220V - 400/230V - 415/240V - 50 or 60Hz
OUTPUT: 0/0V to 520/300V - 40 to 70Hz

H X468 MODELS: INPUT: 440/256V - 460/265V - 480/277V
OUTPUT: 0/0V - 600/346V (OPTION on H SERIES)

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.

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
**STATIC IGBT PWM DESIGN TOPOLOGY**

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 sine wave is then passed through 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)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Voltage Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>H SERIES</td>
<td>380/220V, 400/230V or 415/240V</td>
</tr>
<tr>
<td></td>
<td>X486 Models: 440/254V, 460/265V or 480/277V</td>
</tr>
<tr>
<td>LY SERIES</td>
<td>190/110V, 200/115V, 208/120V or 220/127V</td>
</tr>
<tr>
<td></td>
<td>Other voltages available on individual request / quotation.</td>
</tr>
</tbody>
</table>

**H SERIES**

6 to 400 kVA

**INPUT & OUTPUT VOLTAGE & FREQUENCY SETTINGS**

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Input Voltage Window - S10</th>
</tr>
</thead>
<tbody>
<tr>
<td>H SERIES</td>
<td>L-L / L-N</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>380V</td>
<td>342 to 418V / 198 to 242V</td>
</tr>
<tr>
<td>400V</td>
<td>360 to 440V / 207 to 253V</td>
</tr>
<tr>
<td>415V</td>
<td>374 to 456V / 216 to 264V</td>
</tr>
</tbody>
</table>

**H-X486 SERIES**

6 to 200 kVA

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### Digital Display Panel

![Digital Display Panel Image]

### Product Selection Table

#### H Series & H-X468 Series

<table>
<thead>
<tr>
<th>VSi Model No.</th>
<th>Power Rating</th>
<th>Max. Current for Selectable High or Low Current Output Voltage Ranges</th>
<th>Physical Size &amp; Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KVA (kW)</td>
<td>High Amps per Phase</td>
<td>Low Amps per Phase</td>
</tr>
<tr>
<td>FCL-6H-3P-S10</td>
<td>6 kVA (4.8 kW)</td>
<td>8.3</td>
<td>16.6</td>
</tr>
<tr>
<td>FCL-10H-3P-S10</td>
<td>10 kVA (8 kW)</td>
<td>13.9</td>
<td>27.8</td>
</tr>
<tr>
<td>FCL-15H-3P-S10</td>
<td>15 kVA (12 kW)</td>
<td>20.9</td>
<td>41.8</td>
</tr>
<tr>
<td>FCL-20H-3P-S10</td>
<td>20 kVA (16 kW)</td>
<td>27.8</td>
<td>55.6</td>
</tr>
<tr>
<td>FCL-30H-3P-S10</td>
<td>30 kVA (24 kW)</td>
<td>41.7</td>
<td>83.4</td>
</tr>
<tr>
<td>FCL-45H-3P-S10</td>
<td>45 kVA (36 kW)</td>
<td>62.6</td>
<td>125.2</td>
</tr>
<tr>
<td>FCL-60H-3P-S10</td>
<td>60 kVA (48 kW)</td>
<td>83.4</td>
<td>166.8</td>
</tr>
<tr>
<td>FCL-75H-3P-S10</td>
<td>75 kVA (60 kW)</td>
<td>104.3</td>
<td>208.6</td>
</tr>
<tr>
<td>FCL-100H-3P-S10</td>
<td>100 kVA (80 kW)</td>
<td>139.1</td>
<td>278.2</td>
</tr>
<tr>
<td>FCL-150H-3P-S10</td>
<td>150 kVA (120 kW)</td>
<td>166.9</td>
<td>333.8</td>
</tr>
<tr>
<td>FCL-200H-3P-S10</td>
<td>200 kVA (160 kW)</td>
<td>208.6</td>
<td>412.6</td>
</tr>
<tr>
<td>FCL-240H-3P-S10</td>
<td>240 kVA (192 kW)</td>
<td>278.2</td>
<td>556.4</td>
</tr>
<tr>
<td>FCL-300H-3P-S10</td>
<td>300 kVA (240 kW)</td>
<td>333.8</td>
<td>667.6</td>
</tr>
<tr>
<td>FCL-330H-3P-S10</td>
<td>330 kVA (264 kW)</td>
<td>417.2</td>
<td>834.4</td>
</tr>
<tr>
<td>FCL-400H-3P-S10</td>
<td>400 kVA (320 kW)</td>
<td>556.3</td>
<td>1112.6</td>
</tr>
</tbody>
</table>

**Note:**
1. Larger kVA and alternative voltage options available to order / individual request.
2. X486 Model Sizing & Weights may vary - subject to confirmation at time of ordering.

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## TECHNICAL SPECIFICATION

### General:
- **Phase**: Three Phase, 4 Wire (3P+Neutral+G/E)
- **Ashley-Edison Models**: FCL-6H-3P-S10 to FCL-400H-3P-S10
- **Power Ratings**:
  - 6kVA (4kW), 10kVA (6kW), 15kVA (12kW), 20kVA (16kW), 30kVA (24kW), 45kVA (36kW), 60kVA (48kW), 75kVA (60kW), 100kVA (80kW), 120kVA (96kW), 150kVA (120kW), 200kVA (160kW), 240kVA (192kW), 300kVA (240kW), 330kVA (264kW) & 400kVA (320kW)
  - Larger ratings to special order
- **Design Topology**: Static—IGBT/ Pulse Width Modulated (PWM)

### Input:
- **Voltage**
  - **H Series**: 380/220V - 400/230V - 415/240V ±10%
  - **H-X468 Models**: 440/256V - 460/265V - 480/277V ±10%
- **Frequency**: 47 to 63Hz ±5% (400Hz Option)

### Output:
- **Select a High or Low Current Output Voltage Ranges**
  - **H Series**: High Voltage - 0 to 300V (Option 0 to 346V)*
  - **H-X468 Models**: High Voltage - 0 to 346V
- **Line to Neutral Voltages**
  - **H Series**: Low Voltage - 0 to 150V (Option 0 to 173V)*
  - **H-X468 Models**: Low Voltage - 0 to 173V
- **Voltage Regulation**: ±1%
- **Frequency**: 40 to 70 Hz (Programmable Key Lock Setting)
- **Frequency Stability**: ±0.01%
- **Power Factor**: 0.8 Power Factor
- **Digital Metering**:
  - **Frequency (Hz)**: 4 Digit LED Digital Display - Resolution 0.1Hz/Step
  - **Voltage (Volts)**: 4 Digit LED Digital Display - Resolution 0.1 Volt
  - **Current (Amps)**: 4 Digit LED Digital Display - Resolution 0.1 Amp
  - **Loading (Watts)**: 4 Digit LED Digital Display - Resolution 0.1 Watt

### Protection Features:
- **As Standard**: Electronic Circuit/Circuit Breaker, Overload Warning, Over Temperature, Short Circuit and Auto-Power Off

### 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
- **CE Certification**: CE Marked - being fully compliant with European Union Directives 2014/30/EU (The EMC Directive) and 2014/35/EU (The Low Voltage Directive).

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