

## ICM Controls ICM856

# ICM Controls ICM856 Motor Hard Start Kit Instruction Manual

Model: ICM856 | Manufacturer: ICM Controls

## 1. INTRODUCTION

The ICM Controls ICM856 is a motor hard start kit designed to enhance the starting performance of single-phase Permanent Split Capacitor (PSC) motors. Utilizing Positive Temperature Coefficient (PTC) technology, this device provides a significant increase in starting torque, up to 500%, facilitating reliable motor startup in various applications. It is suitable for PSC motors ranging from 1/2 hp to 10 hp.



**Figure 1:** ICM Controls ICM856 Motor Hard Start Kit. This image displays the cylindrical hard start kit, primarily black with a blue label visible on the lower portion. The label shows 'CM856' and text indicating it's a 'Relay and Start Capacitor' for PSC units from 1/2 through 10 HP. Wires with connectors extend from the top of the unit.

## 2. SAFETY INFORMATION

**WARNING:** Electrical shock hazard. Installation and servicing should only be performed by qualified personnel. Disconnect all power to the unit before installing or servicing this device. Failure to follow these instructions may result in serious injury or death.

- Always ensure power is disconnected at the main breaker before beginning any work.
- Verify voltage and current ratings are compatible with the motor and electrical system.
- Wear appropriate personal protective equipment (PPE), including safety glasses and insulated gloves.
- Do not bypass any safety devices.

## 3. SPECIFICATIONS

Feature	Detail
Model	ICM856

Feature	Detail
Item Model Number	9801883
Application	Single-Phase PSC Motors
Horsepower Range	1/2 hp to 10 hp
Torque Multiplier	Up to 500%
Technology	Positive Temperature Coefficient (PTC)
Dimensions	6 x 2 x 2 inches
Weight	7.04 ounces
Manufacturer	ICM Controls

#### 4. INSTALLATION INSTRUCTIONS

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- Power Disconnection:** Ensure all power to the motor and associated equipment is completely disconnected at the main electrical panel. Verify with a voltage tester.
- Locate Motor Run Capacitor:** Identify the existing run capacitor on the motor. The ICM856 is designed to work in parallel with this component.
- Wiring:** Connect the two wires from the ICM856 in parallel with the motor's run capacitor. This typically involves connecting one wire from the ICM856 to each of the two terminals of the run capacitor. Refer to the motor's wiring diagram for specific connections.
- Secure Device:** Mount the ICM856 securely within the motor's electrical compartment, ensuring it does not interfere with moving parts or other electrical components.
- Verify Connections:** Double-check all wiring connections for tightness and correct polarity.
- Restore Power:** Once installation is complete and verified, restore power to the unit.
- Test Operation:** Observe the motor's startup. It should start more quickly and smoothly.

**Note:** The ICM856 is intended for use only on PSC units. Do not remove any original start components unless specifically instructed by the motor manufacturer.

#### 5. OPERATION

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The ICM856 operates automatically upon motor startup. When the motor attempts to start, the PTC device within the ICM856 provides an additional surge of current to the motor's start winding, significantly boosting the initial torque. As the motor reaches operating speed, the PTC device's resistance increases rapidly, effectively removing itself from the circuit, allowing the motor to run efficiently on its run capacitor. This process is seamless and requires no user intervention after installation.

#### 6. MAINTENANCE

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The ICM856 is a solid-state device and generally requires no routine maintenance. However, periodic inspection of the wiring connections is recommended to ensure they remain secure and free from corrosion.

- Annually inspect all wiring for signs of wear, fraying, or loose connections.

- Ensure the device is free from excessive dust, dirt, or moisture accumulation.
- If the motor exhibits starting issues after installation, first check the ICM856's connections before troubleshooting other motor components.

## 7. TROUBLESHOOTING

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- **Motor Fails to Start:**
  - Verify all power connections are secure and correct.
  - Ensure the motor's run capacitor is functioning correctly.
  - Check for proper voltage supply to the motor.
  - Confirm the ICM856 is correctly wired in parallel with the run capacitor.
- **Motor Starts Slowly or with Difficulty:**
  - Re-check all wiring connections.
  - Ensure the ICM856 is compatible with the motor's horsepower rating (1/2 hp to 10 hp).
  - Inspect the motor itself for mechanical issues or excessive load.
- **Device Overheats:**
  - This is unlikely for a PTC device in normal operation. If overheating occurs, immediately disconnect power and consult a qualified technician. This could indicate incorrect wiring or a fault in the motor or device.

For persistent issues, consult a qualified HVAC or electrical technician.


## 8. WARRANTY AND SUPPORT

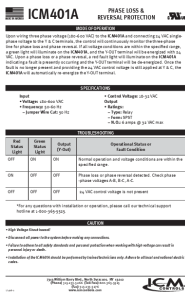
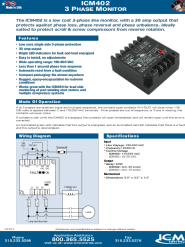



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For specific warranty information and technical support regarding your ICM Controls ICM856 Motor Hard Start Kit, please refer to the documentation provided with your purchase or consult the manufacturer's official website.

**Manufacturer:** ICM Controls

### Related Documents - ICM856

	<p><a href="#">ICM325A Single Phase Universal Head Pressure Control Installation Guide</a></p> <p>Installation, operation, and application guide for the ICM325A Single Phase Universal Head Pressure Control. Features NFC technology for programming via the ICM Omni App, dual sensor inputs, heat pump bypass, and universal voltage.</p>
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 <p><b>ICM401A</b> PHASE LOSS &amp; REVERSAL PROTECTION</p> <p>This is a 3-phase line voltage monitor that will protect your equipment from phase loss, phase reversal, and phase unbalance. It is designed to be used in conjunction with a 3-phase motor or other 3-phase equipment. The monitor will trip the circuit if a phase is lost, if the phases are reversed, or if the phases are unbalanced. The monitor will also provide a visual indication of the fault condition.</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• 3-phase line voltage monitor</li> <li>• Phase loss protection</li> <li>• Phase reversal protection</li> <li>• Phase unbalance protection</li> <li>• Visual indication of fault condition</li> </ul> <p><b>Specifications:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Phase Voltage</td> <td>208V, 240V, 277V, 480V</td> </tr> <tr> <td>Phase Current</td> <td>10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A</td> </tr> <tr> <td>Operating Temperature</td> <td>-40°C to 70°C</td> </tr> <tr> <td>Storage Temperature</td> <td>-40°C to 125°C</td> </tr> <tr> <td>Humidity</td> <td>5% to 95% RH</td> </tr> <tr> <td>Shock</td> <td>10g, 100g, 1000g</td> </tr> <tr> <td>Vibration</td> <td>10g, 100g, 1000g</td> </tr> </tbody> </table> <p><b>Installation:</b></p> <p>The monitor should be installed in a dry, well-ventilated area. It should be connected to the 3-phase line voltage and to a ground. The monitor should be connected to the 3-phase motor or other 3-phase equipment. The monitor should be connected to a ground.</p> <p><b>Operation:</b></p> <p>The monitor will trip the circuit if a phase is lost, if the phases are reversed, or if the phases are unbalanced. The monitor will also provide a visual indication of the fault condition.</p> <p><b>Troubleshooting:</b></p> <p>If the monitor trips, check the 3-phase line voltage and the ground connection. If the monitor trips again, contact ICM Controls for technical support.</p> <p><b>ICM Controls</b></p>	Item	Value	Phase Voltage	208V, 240V, 277V, 480V	Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A	Operating Temperature	-40°C to 70°C	Storage Temperature	-40°C to 125°C	Humidity	5% to 95% RH	Shock	10g, 100g, 1000g	Vibration	10g, 100g, 1000g	<p><a href="#">ICM401A 3-Phase Monitor: Phase Loss &amp; Reversal Protection Installation Guide</a></p> <p>Detailed installation guide and specifications for the ICM401A 3-phase line voltage monitor by ICM Controls. Learn about its operation, troubleshooting, and safety precautions for phase loss and reversal protection.</p>
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Phase Voltage	208V, 240V, 277V, 480V																
Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A																
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Vibration	10g, 100g, 1000g																
 <p><b>ICM402</b> 3 PHASE MONITOR</p> <p>This is a 3-phase line voltage monitor that will protect your equipment from phase loss, phase reversal, and phase unbalance. It is designed to be used in conjunction with a 3-phase motor or other 3-phase equipment. The monitor will trip the circuit if a phase is lost, if the phases are reversed, or if the phases are unbalanced. The monitor will also provide a visual indication of the fault condition.</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• 3-phase line voltage monitor</li> <li>• Phase loss protection</li> <li>• Phase reversal protection</li> <li>• Phase unbalance protection</li> <li>• Visual indication of fault condition</li> </ul> <p><b>Specifications:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Phase Voltage</td> <td>208V, 240V, 277V, 480V</td> </tr> <tr> <td>Phase Current</td> <td>10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A</td> </tr> <tr> <td>Operating Temperature</td> <td>-40°C to 70°C</td> </tr> <tr> <td>Storage Temperature</td> <td>-40°C to 125°C</td> </tr> <tr> <td>Humidity</td> <td>5% to 95% RH</td> </tr> <tr> <td>Shock</td> <td>10g, 100g, 1000g</td> </tr> <tr> <td>Vibration</td> <td>10g, 100g, 1000g</td> </tr> </tbody> </table> <p><b>Installation:</b></p> <p>The monitor should be installed in a dry, well-ventilated area. It should be connected to the 3-phase line voltage and to a ground. The monitor should be connected to the 3-phase motor or other 3-phase equipment. The monitor should be connected to a ground.</p> <p><b>Operation:</b></p> <p>The monitor will trip the circuit if a phase is lost, if the phases are reversed, or if the phases are unbalanced. The monitor will also provide a visual indication of the fault condition.</p> <p><b>Troubleshooting:</b></p> <p>If the monitor trips, check the 3-phase line voltage and the ground connection. If the monitor trips again, contact ICM Controls for technical support.</p> <p><b>ICM Controls</b></p>	Item	Value	Phase Voltage	208V, 240V, 277V, 480V	Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A	Operating Temperature	-40°C to 70°C	Storage Temperature	-40°C to 125°C	Humidity	5% to 95% RH	Shock	10g, 100g, 1000g	Vibration	10g, 100g, 1000g	<p><a href="#">ICM402 3-Phase Monitor: Features, Specifications, and Wiring</a></p> <p>Detailed information on the ICM402 3-Phase Monitor, including its features, technical specifications, and wiring diagrams. This device protects against phase loss, phase reversal, and phase unbalance, ideal for compressors.</p>
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Phase Voltage	208V, 240V, 277V, 480V																
Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A																
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Shock	10g, 100g, 1000g																
Vibration	10g, 100g, 1000g																
 <p><b>ICM325A</b> SINGLE PHASE UNIVERSAL HEAD PRESSURE CONTROL</p> <p>This is a single phase universal head pressure control that will protect your equipment from high head pressure. It is designed to be used in conjunction with a single phase compressor. The control will trip the circuit if the head pressure is too high. The control will also provide a visual indication of the fault condition.</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• Single phase universal head pressure control</li> <li>• High head pressure protection</li> <li>• Visual indication of fault condition</li> </ul> <p><b>Specifications:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Phase Voltage</td> <td>208V, 240V, 277V, 480V</td> </tr> <tr> <td>Phase Current</td> <td>10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A</td> </tr> <tr> <td>Operating Temperature</td> <td>-40°C to 70°C</td> </tr> <tr> <td>Storage Temperature</td> <td>-40°C to 125°C</td> </tr> <tr> <td>Humidity</td> <td>5% to 95% RH</td> </tr> <tr> <td>Shock</td> <td>10g, 100g, 1000g</td> </tr> <tr> <td>Vibration</td> <td>10g, 100g, 1000g</td> </tr> </tbody> </table> <p><b>Installation:</b></p> <p>The control should be installed in a dry, well-ventilated area. It should be connected to the single phase line voltage and to a ground. The control should be connected to the single phase compressor. The control should be connected to a ground.</p> <p><b>Operation:</b></p> <p>The control will trip the circuit if the head pressure is too high. The control will also provide a visual indication of the fault condition.</p> <p><b>Troubleshooting:</b></p> <p>If the control trips, check the head pressure and the ground connection. If the control trips again, contact ICM Controls for technical support.</p> <p><b>ICM Controls</b></p>	Item	Value	Phase Voltage	208V, 240V, 277V, 480V	Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A	Operating Temperature	-40°C to 70°C	Storage Temperature	-40°C to 125°C	Humidity	5% to 95% RH	Shock	10g, 100g, 1000g	Vibration	10g, 100g, 1000g	<p><a href="#">ICM325A Single Phase Universal Head Pressure Control Installation and Operation Guide</a></p> <p>Detailed guide for installing, operating, and troubleshooting the ICM325A Single Phase Universal Head Pressure Control by ICM Controls. Features NFC connectivity, universal voltage, and variable fan speed control for HVAC systems.</p>
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Phase Voltage	208V, 240V, 277V, 480V																
Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A																
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Shock	10g, 100g, 1000g																
Vibration	10g, 100g, 1000g																
 <p><b>ICM493</b> PROGRAMMABLE SINGLE-PHASE VOLTAGE MONITOR WITH SURGE PROTECTION</p> <p>This is a programmable single-phase voltage monitor with surge protection that will protect your equipment from voltage surges. It is designed to be used in conjunction with a single phase motor or other single phase equipment. The monitor will trip the circuit if a voltage surge is detected. The monitor will also provide a visual indication of the fault condition.</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• Programmable single-phase voltage monitor</li> <li>• Surge protection</li> <li>• Visual indication of fault condition</li> </ul> <p><b>Specifications:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Phase Voltage</td> <td>208V, 240V, 277V, 480V</td> </tr> <tr> <td>Phase Current</td> <td>10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A</td> </tr> <tr> <td>Operating Temperature</td> <td>-40°C to 70°C</td> </tr> <tr> <td>Storage Temperature</td> <td>-40°C to 125°C</td> </tr> <tr> <td>Humidity</td> <td>5% to 95% RH</td> </tr> <tr> <td>Shock</td> <td>10g, 100g, 1000g</td> </tr> <tr> <td>Vibration</td> <td>10g, 100g, 1000g</td> </tr> </tbody> </table> <p><b>Installation:</b></p> <p>The monitor should be installed in a dry, well-ventilated area. It should be connected to the single phase line voltage and to a ground. The monitor should be connected to the single phase motor or other single phase equipment. The monitor should be connected to a ground.</p> <p><b>Operation:</b></p> <p>The monitor will trip the circuit if a voltage surge is detected. The monitor will also provide a visual indication of the fault condition.</p> <p><b>Troubleshooting:</b></p> <p>If the monitor trips, check the single phase line voltage and the ground connection. If the monitor trips again, contact ICM Controls for technical support.</p> <p><b>ICM Controls</b></p>	Item	Value	Phase Voltage	208V, 240V, 277V, 480V	Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A	Operating Temperature	-40°C to 70°C	Storage Temperature	-40°C to 125°C	Humidity	5% to 95% RH	Shock	10g, 100g, 1000g	Vibration	10g, 100g, 1000g	<p><a href="#">ICM493 Programmable Single-Phase Voltage Monitor with Surge Protection Installation Guide</a></p> <p>Detailed guide for installing, operating, and applying the ICM493 Programmable Single-Phase Voltage Monitor with Surge Protection. Covers safety, installation steps, calibration, specifications, and button functions for HVAC and industrial applications.</p>
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Vibration	10g, 100g, 1000g																
 <p><b>SENTRY 3N1</b> SINGLE-PHASE VOLTAGE &amp; SURGE PROTECTED DISCONNECT</p> <p>This is a single-phase voltage and surge protected disconnect that will protect your equipment from voltage surges. It is designed to be used in conjunction with a single phase motor or other single phase equipment. The disconnect will trip the circuit if a voltage surge is detected. The disconnect will also provide a visual indication of the fault condition.</p> <p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• Single-phase voltage and surge protected disconnect</li> <li>• Visual indication of fault condition</li> </ul> <p><b>Specifications:</b></p> <table border="1"> <thead> <tr> <th>Item</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Phase Voltage</td> <td>208V, 240V, 277V, 480V</td> </tr> <tr> <td>Phase Current</td> <td>10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A</td> </tr> <tr> <td>Operating Temperature</td> <td>-40°C to 70°C</td> </tr> <tr> <td>Storage Temperature</td> <td>-40°C to 125°C</td> </tr> <tr> <td>Humidity</td> <td>5% to 95% RH</td> </tr> <tr> <td>Shock</td> <td>10g, 100g, 1000g</td> </tr> <tr> <td>Vibration</td> <td>10g, 100g, 1000g</td> </tr> </tbody> </table> <p><b>Installation:</b></p> <p>The disconnect should be installed in a dry, well-ventilated area. It should be connected to the single phase line voltage and to a ground. The disconnect should be connected to the single phase motor or other single phase equipment. The disconnect should be connected to a ground.</p> <p><b>Operation:</b></p> <p>The disconnect will trip the circuit if a voltage surge is detected. The disconnect will also provide a visual indication of the fault condition.</p> <p><b>Troubleshooting:</b></p> <p>If the disconnect trips, check the single phase line voltage and the ground connection. If the disconnect trips again, contact ICM Controls for technical support.</p> <p><b>ICM Controls</b></p>	Item	Value	Phase Voltage	208V, 240V, 277V, 480V	Phase Current	10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 55A, 60A, 65A, 70A, 75A, 80A, 85A, 90A, 95A, 100A	Operating Temperature	-40°C to 70°C	Storage Temperature	-40°C to 125°C	Humidity	5% to 95% RH	Shock	10g, 100g, 1000g	Vibration	10g, 100g, 1000g	<p><a href="#">Sentry 3N1: Single-Phase Voltage &amp; Surge Protected Disconnect Installation Guide   ICM Controls</a></p> <p>Comprehensive installation, operation, and troubleshooting guide for the ICM Controls Sentry 3N1, a single-phase voltage and surge protected disconnect featuring ICM492D voltage monitor and ICM517A surge protector.</p>
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