Operation

- Intended for use with 3-Phase, 50/60Hz
- Accepts 208-600VAC ±10%
- Short Circuit (RMS, Symmetrical)
- Stand-Alone Overload Unit - 200 KAIC, 600V Max.
- Standard Starter - See UL label on panel
- Combination Starter - See UL label on panel
- Ambient Operating Temperature = -20°C to 60°C
- Ambient Storage Temperature = -40°C to 85°C

**Operation Modes**

**ON (HAND)**
Press the ON mode button to manually engage motor.

**OFF (RESET)**
Press the OFF mode button to manually disengage the motor. Additionally, the OFF button serves as a manual Reset. Press and hold OFF for 5 seconds to Reset the starter after a fault trip.

**AUTO**
When utilizing AUTO mode, the starter is controlled by a remote Start/Stop command.

**LED Status Indicators**

**MODE LEDs**
Illuminates with corresponding mode selection (HAND/OFF/AUTO). Flashing mode LED signals a fault trip during the last operating mode.

**RUN LED**
Illuminates when starter is given a Run signal and 20% of the overload current setting is detected. LED will flash when Run signal is present without proof of flow to the motor.

**FAULT LED**
Blinks when current reaches 115% of the overload setting or greater and illuminates upon a fault condition or overload trip. Starter must be returned to the OFF mode in order to Reset.

**Setting Adjustments**

**Overload**
Set the overload dial to the SFA amperage value listed on the motor nameplate. If no amperage value for SFA is provided, set the overload dial to the FLA listed on the motor nameplate.

**Underload**
For submersible motor applications, it is suggested that the dial be set to 70% to protect against dry-run condition.

**I/O Descriptions**

- Use 14-26AWG wire for I/O Terminals, Torque to 3.5 lb-in
- Connections for I/O Terminals: 1/2-12hr run switch for motor control. (Wired from manufacturer on N3R enclosed units)
- Connections for a 3-position (HOA) switch for motor control. (Wired from manufacturer on N3R enclosed units)
- Connections for optional 1/2-12hr run timer.

**I2t Trip Curve**

Product improvement is a continual process. Cerus, Mira, Smartstart and associated logos are trademarks of Franklin Electric Co., Inc. All sales are subject to FE Terms & Conditions.

800.348.2420 | www.franklinwater.com

Installation & Operation Guide

This manual is available for download at www.franklinwater.com

**Precautions**

To prevent injury and property damage, follow these instructions. Failure to adhere to installation/operation procedures and all applicable codes may result in hazards as indicated by warning codes outlined below:

- **DANGER**
  Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

- **WARNING**
  Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

- **CAUTION**
  Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

- **This is the safety alert symbol. Read and follow instructions carefully to avoid a dangerous situation.**

- **This symbol alerts the user to the presence of “dangerous voltage” inside the product that might cause harm or electrical shock.**

**Safety Instructions**

- **DANGER**
  Equipment can start automatically. Lockout/tagout before servicing.

- **CAUTION**
  As with all electrical products, read manual thoroughly. Only qualified, expert personnel should perform maintenance and installation. Contact the nearest authorized service facility for examination, repair, or adjustment. Do not disassemble or repair unit unless described in this manual; death or injury to electrical shock or fire hazard may result. Specifications and manual data subject to change. Consult factory for additional information.
Installation

**DANGER**

HAZARDOUS VOLTAGE
- Disconnect and lock out all power before installing or servicing equipment.
- This equipment may require locking out multiple power sources prior to service.
- Install and wire in accordance with all applicable local & national electrical and construction codes.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DEATH OR SERIOUS INJURY

Mounting
Mount the starter on a vertical surface, with the line terminals facing up.

CE compliant Installations
To conform to the EMC directive a ferrite core is required on the input of the starter module. Consult the factory for the recommended part number. For a CE compliant installation, all electrical connections must be made by a qualified electrical technician.

**WARNING**

- To maintain overcurrent and short-circuit protection, the manufacturer’s instructions for selecting current elements and setting the instantaneous-trip circuit breaker must be followed.
- Tripping of the instantaneous-trip circuit breaker is an indication that a fault current has been interrupted. Current-carrying components of the magnetic motor controller should be examined and replaced if damaged to reduce the risk of fire or electric shock.
- Do not locate starter in an environment subject to flammable gases, dusts or materials. Contact arcing can induce explosion or fire.
- Locate starter in a location appropriate to enclosure ratings and operational ratings.
  (e.g. NEMA 1 should only be located in a dry, protected environment).
- Do not allow any metal shavings or debris from installation to enter enclosure.

Wiring
Wire main power input and motor leads to the appropriate terminals as indicated in the Torque Table below. Use only copper conductors rated at least 60°C for applications less than 100A and at least 75°C ≥ 100A. Maintain proper clearances and ensure that wires are not under stress and all insulation is intact.

Low Voltage Wiring
Automation system control wiring should be run in a separate conduit. The control terminals accept 26~14AWG wire torqued to 3.5 lb-in.

Torque Table

<table>
<thead>
<tr>
<th>Starter</th>
<th>Input (lb-in)</th>
<th>Output (lb-in)</th>
<th>Terminal Blocks</th>
<th>Motor Leads</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSP1-S1P-32</td>
<td>10.6</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSP1-S2-50</td>
<td>10.6</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Program Switches

**Program Switches**

<table>
<thead>
<tr>
<th>Position</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWITCH 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>Position 1</td>
<td></td>
</tr>
<tr>
<td>Phase Unbalance</td>
<td>(Position 1) - Trips in the event of phase loss or if any 1 phase deviates by more than 25% from average. (Position 2) - Trips in the event of phase loss of if any 1 phase deviates by more than 80% of average.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWITCH 2</td>
<td>Default =</td>
</tr>
<tr>
<td>2</td>
<td>Position 2</td>
</tr>
<tr>
<td>Power Fail Modes</td>
<td>(Position 1) - In the event of a power failure, the starter will return to OFF mode. (Position 2) - In the event of a power failure, the starter will return the last mode it was in (Hand, Off, or Auto) within 10 seconds.</td>
</tr>
</tbody>
</table>

Protective Features

| Cycle Fault | Trips when the starter is activated at a rate exceeding 20 starts per minute. |
| Hardware Fault | Trips if the starter’s current drawn from the 24V contactor terminals exceeds the rating of the contactor. Also trips if the wrong size contactor is installed, or in the event of a circuit board failure. Note: Contactor terminals C+ & C- are for use with a Franklin Electric contactor only. Do not connect to any other devices. |
| Locked Rotor | Trips when a locked rotor condition is detected for 0.5 seconds. (Smartstart mode only) |
| Max Start Time | Trips when the motor takes more than 10 seconds to start. (Smartstart mode only) |
| No Current Fault | Trips if no current detected 10 seconds after a run command has been received. |
| Stall | Trips if a STALL condition is detected. (0.5 sec @ 300% overload setting and current slope not decreasing) Disabled during startup. |
| Overload | Trip current = 115% of dial setting. Trips when the load is greater than the trip current. (0-100% overload setting) |
| Underload | Trips if the current falls below the user selected % threshold of the overload dial setting for 0.5 seconds and if the current is not increasing. (0-100% of overload setting) |
| Current Phase Unbalance | Trips in the event of a phase failure or if any phase deviates by more than 25% from the average when Smartstart is enabled. If Smartstart is disabled, the starter will trip if any phase deviates more than 80% of the average. |

Electronic Overload Operation

When a fault trip occurs, the fault LED will illuminate. The type of fault will be indicated by flashing a combination of the HAND/OFF/AUTO/RUN/FAULT LEDs as indicated in the table below.

<table>
<thead>
<tr>
<th>FAULT</th>
<th>FLASHING LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle Fault</td>
<td>NONE</td>
</tr>
<tr>
<td>Hardware Fault</td>
<td>RUN &amp; FAULT LEDs</td>
</tr>
<tr>
<td>Locked Rotor</td>
<td>OFF LED</td>
</tr>
<tr>
<td>Max Start Time</td>
<td>OFF &amp; AUTO LEDs</td>
</tr>
<tr>
<td>No Current Fault</td>
<td>HAND LED</td>
</tr>
<tr>
<td>Stall</td>
<td>HAND &amp; AUTO LEDs</td>
</tr>
<tr>
<td>Overload</td>
<td>HAND &amp; OFF LEDs</td>
</tr>
<tr>
<td>Underload</td>
<td>AUTO LED</td>
</tr>
<tr>
<td>Phase Unbalance</td>
<td>HAND, OFF, &amp; AUTO LEDs</td>
</tr>
</tbody>
</table>

Wiring Schematic*

*Standard product wiring diagram shown. As-built product wiring may vary. Product wiring diagram located on starter enclosure.