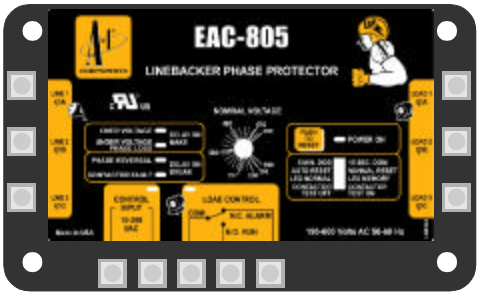
LINEBACKER PHASE PROTECTOR

EAC-805



Universal Line Voltage Monitor with Control Input & Contactor/Load Monitoring

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P/N LB0148

1 - INTRODUCTION

Three phase motors and compressors typically receive their power from generating stations miles away. This distance and other factors including thousands of connections to various users, lightning, and accidental damage to power lines and distribution equipment can cause varying or complete loss of power supplied to your expensive motor or air conditioner. Abnormally high or low voltage supplied to motors and compressors may not immediately cause a visible problem, however supplying an incorrect voltage level to a running motor or compressor causes increased internal heating, which shortens motor life. Further variance in line voltage can destroy your motor. Protect your investment against abnormal line voltage conditions by installing A-1's EAC-805 three phase line voltagemonitor.

The designers of A-1's EAC-805 have foreseen the needs of today's demanding line voltage monitoring by utilizing modern micro-computer technology. Precision measurement techniques monitor each of the three input phases at all times and calculate voltage levels, voltage tolerance, and contactor condition. If the power supplied to your motor or compressor varies from the parameters preset into the EAC-805's permanent memory, the EAC-805 will immediately command a complete system shut down. Upon detection of correct incoming power, and a preset delay, the EAC-805 will restart the system. If a critical system problem is detected the EAC-805 will wait for a manual restart. Additional internal circuitry continuously monitors the operation of the EAC-805's internal systems and initiates self correcting measures as required.

Installation is a snap with simplified connections and adjustment. Instant verification of all system conditions is conveniently accessible by simply checking the LEDs on the panel. The EAC-805's circuitry automatically adjusts for line voltage connections in the range of 190 to 600 volts without the use of range plugs or jumpers.

The EAC-805 package also includes an anticipator load, to be installed when required, to ensure the correct operation of mechanical and electronic thermostats when used in HVAC applications.

Installing the EAC-805 affords the best three phase motor and compressor protection available without the use of current transformers. Nuisance service calls are virtually eliminated by the EAC-805's built in features.

System operation using the EAC-805 is fully automatic with visible LED indicators providing convenient assessment of control voltage, load energization, and fault conditions. In the event of a line or contactor fault, the EAC-805 may keep the fault LEDs lit, making easy routinemaintenance or service.

The EAC-805 is easy to install and setup using the voltage selector knob and dip switch on the panel. Operator adjustment of the EAC-805 can be preset at the wholesaler or factory for simplified job site installation.

2 - SPECIFICATIONS

2.1) Line Input Voltage

190 to 600 VAC 50/60 Hz. Universal Input Voltage Range (does not require range plugs, jumpers or switches).

2.2) Contactor /Load Side Voltage

With the same range as input voltage, Contactor/Load side monitoring is optional andmaybeenabledordisabled using the dip switch.

2.3) Over/Under Voltage

Preset to ±10% of the nominal voltage. Provides load shut down and fault indication when the line voltage becomes 10% greater/lower than nominal value selected. Load will be shut down after the FAULTDELAYhaselapsed.

2.4) Phase Loss Protection

The load is immediately shut down in the event of a phase loss detection.

2.5) Phase Reversal Protection

Provides protection to the load against errors in the phase sequence connection. The load is immediately shut down.

2.6) Delay-On-Break (DOB) Timer

Preset to 5 minutes. Provides delay-on-break of either control signal or power faults. DOB timer continues to function with or without power applied to the EAC-805. Load will not re-energize until delay has elapsed.

2.7) Delay-On-Make (DOM)Timer

Preset to 15 seconds. Provides delay when power returns to a non fault condition. Load will not be energized until delay has elapsed.

2.8) Fault Delay Timer

Preset to 5 seconds. Provides a time delay between the detection of a fault and actual load shut-down, to confirm the fault condition. Load will be shut down after FAULT DELAY in the event of a fault condition.

2.9) Control Voltage

18 to 288 VAC 50/60Hz. Controls EAC-805 output relay when dip switch is in 5 MIN DOB position.

2.10) Output Relay Rating

10A/5A @ 240VAC	Resistive/GP	100,000 operations
10A/5A @ 28VDC	Resistive	100,000 operations
240VA, 240VAC	Pilot Duty	100,000 operations
12A NO @ 120VAC	Resistive/GP	100,000 operations

2.11) Operating Temperature Range

-20°C to +80°C (-4°F to 176°F)

3 - CONTROLS & INDICATORS

3.1) Nominal Voltage Selector

Adjust the knob pointer to nominal line voltage.

3.2) Reset Key

Use this key to reset the lockout function when in MANUAL RESET mode or to reset the LEDMEMORY fault indications.

3.3) DIP Switch

3.3.1) 5 MIN. DOB / 15 SEC. DOM

Use this switch to choose 5 minutes DOB or 15 seconds DOM modes.

In the 15 seconds DOM mode, there is no DOB, the control input and load/contactor side are not verified. The output relay will operate depending only on the power line conditions.

In the 5 minutes DOB mode, there is no DOM, the load/contactor side may be monitored and the control voltage MUST be present to enable the output relay to operate, depending also on the power line conditions. If the control voltage is not present, the output relay will shut down regardless of the power line conditions.

3.3.2) AUTO RESET / MANUALRESET

Use this switch to choose Auto or Manual reset for the fault events. AUTO RESET means that the EAC-805 will restart as soon as the line power returns to normal and the selected delay has elapsed. MANUAL RESET means that the fault will lockout the unit until the user presses the RESET key.

3.3.3) LED NORMAL / LED MEMORY

Use this switch to choose between LED normal or memory operation. LED NORMAL means the EAC-805 will turn the LED off as soon as the fault that caused the indication is back to normal. LED MEMORY means that the fault LED will stay on until the user presses the RESET key.

3.3.4) CONTACTOR TEST OFF / CONTACTOR TESTON

Use this switch to turn ON or OFF the contactor test. If it is OFF, the load/contactor side will not bemonitored and will have no effect on the output relay.

If it is ON, when the output relay is turned on, the EAC-805 will monitor the voltage at load/contactor side, to verify if the contactor was turned on correctly. If it was not, the EAC-805 will turn the relay off, and wait for the DOB/DOM timer. After

that, a new retry will be made to turn the contactor on. The EAC-805 will make 3 retries before locking out the unit, even if the AUTO RESET is selected. To rearm the EAC-805, press and hold the RESET key until the LED turns off.

The number of retries will be reset either by turning the control voltage off or if 30minutes have elapsed without another fault.

3.4) Power ON LED

It will light when voltage is applied to the line inputs, allowing the EAC-805 to startmonitoring the voltage and perform its functions.

3.5) Over Voltage LED

When lit(ON), indicates a memorized over voltage event.Whenit flashes, indicate an over voltage condition.

3.6) Under Voltage / Phase Loss LED

When lit (ON), indicates a memorized under voltage/phase loss event. When it flashes, indicate a presence of under voltage/phase loss condition.

When both OVER VOLTAGE and UNDER VOLTAGE LEDs are flashing, the Delay-on-Make timer is in progress.

3.7) Phase Reversal LED

When lit (ON), indicates a memorized phase reversal event.When it flashes, indicate a phase reversal condition.

3.8) Contactor Fault LED

When lit (ON), indicates a memorized contactor fault event.When it flashes, indicate that a contactor fault retry is in progress.

When both PHASE REVERSAL and CONTACTOR FAULT LEDs are flashing, the Delay-on-Break timer is in progress.

3.9) Control LED

Indicates that there is control voltage present at the control input terminals.

3.10) LoadControl LED

Indicates that the relay contacts are closed between COM and RUN terminals.

4 - INSTALLATION INSTRUCTIONS

SAFETY FIRST! ALWAYS DISCONNECT POWER TO THE SYSTEM PRIOR TO MAKING ANY CONNECTIONS. VERIFY THAT ALL POWER FROM BOTH THE CONTROL AND LINE SOURCES ARE LOCKED OUT AND TAGGED!

4.1)Mounting

Select a mounting location for the EAC-805 in the equipment control cabinet. The location you select should be dry, cool, and allow ample room for the operator to setup or make adjustments to the EAC-805's controls.

Use (4) #8 screws to mount the control on a flat surface in the control panel of the equipment being protected. The unit will operate at temperatures up to 80ºC (176°F). Remember that heat is the enemy of all electronic circuits and the cooler your equipment, the longer it will last and the better it will perform.

4.2) Electric Connection

Refer to the National Electric Code article 430 or governing local authority for safe wiring practices.

4.3) Connect Power

Refer to wiring diagram as example. Without removing existing line side connections to the contactor, add suitably sized connections to one amp fuses located close to the contactor. These fuses are required by the National Electric Code and provide protection to added field wiring. From the fuses, connect the three phase power to the EAC-805 Line 1, Line 2, and Line 3 terminals.

4.4) Connect Load SideMonitor

Without removing existing load side connections to the contactor, add suitably sized connections to one amp fuses located close to the contactor load side of the EAC-805 Load 1, Load 2, and Load 3 terminals.

Ensure that the input power connections and the load side monitor terminals connect to the same phase (respectively). Also ensure that the phase rotation sequence is ABC (L1, L2, L3).

4.5) Connection Control Input andContactor Coil

Interrupt the connection between the controlling device (thermostat yellow wire) and the contactor coil. Connect the line from the thermostat to the first control input located on the EAC-805. Connect the line going to the contactor coil to the RUN terminal on the EAC-805.

Connect the second control input located on the EAC-805 to the other side of the contactor coil (common line).

Finally, add a wire from the thermostat and control transformer (thermostat red) to the COM connection on the EAC-805.

If required, connect the optional "anticipator load" to the control input terminals, as shown in the wiring diagram.

4.6) Power Up

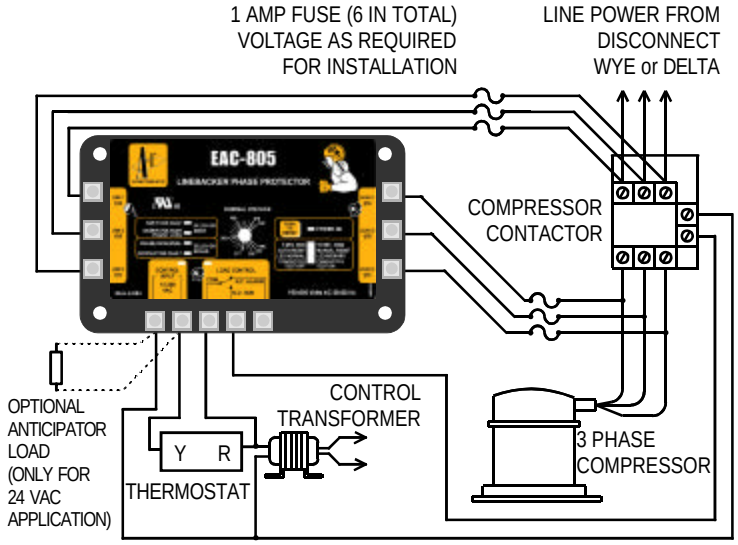
There is no ON/OFF switch on the EAC-805. Connecting power to the unit will activate it. A few seconds after power is applied, the POWER ON LED will light and the EAC-805 will start protecting your system.

5 - TROUBLE SHOOTING

In the event the EAC-805 fails to operate properly, check these items first:

Symptom	LEDS	Solution
Load will not energize	Load LED not lit.	Check Control Input
LED's Blink periodically but unit never comes up.	Blinking	Line voltage is too low and/or phasemissing.
Control LED does not go out When control is off.	Control LED always on.	Control input is very sensitive. Insure control voltage <2 for off condition.
System trips out on high or low line voltage.	Fault LED flashes (due to fault).	Check normal line voltage. Re-adjust voltage range as required.

6 - WIRING DIAGRAM



This circuit shows the EAC-805 connected to provide voltage monitoring of both line and load sides of the compressor contactor. A external "anticipator load" may be required when using a 24VAC thermostat to provide the control voltage.

Note: Install fuses as shown to protect branch circuit wiring and conform to the National Electric Article 430 and local ordinance as required.

Note: Fan and other thermostat wiring not shown.

LIMITED WARRANTY

OUR WARRANTY IS GOOD FOR ONE FULL YEAR AND BACKS UP OUR CLAIMS FOR QUALITY PRODUCTS

A-1 Components, Corp. Warrants to the first direct purchaser, that this product is free from defects in materials or workmanship. This warranty is extended for twelve months from date of purchase of the product.

A-1 Components, Corp. will repair or replace at its option, any of its products that prove to be defective within limits of this warranty. This warranty does not include labor or shipping cost necessary to replace or repair the products.

This warranty shall not apply to any product that has been subjected to improper installations, abuse, misuse or other circumstances beyond the control of **A-1 Components, Corp.** No warranty, whatsoever, is being made hereby which extends to the consumer as defined by the Magnuson-Moss Warranty Federal Trade Commission Act 15 US, C2301 et seq. To the extent that they may be legally disclaimed, the warranty herein is in leu of any other warranty, expressed or implied, including those of fitness for any particular purpose or merchantability concerning the goods offered for sale hereunder and none shall be implied by law.

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