DC

PROGRAMMABLE CURRENT MEASUREMENT

with

SURE-TRIP RETRO KITS

DC CIRCUIT BREAKER
SOLID STATE CONTROLS
with

SURE-TRIP LOGIC

All Solid State Tripping Systems Have Been Designed, Tested And Produced To All Applicable NEMA and UL Standards.

DESIGN TESTED

NUCLEAR APPROVED
CLASS 1E SAFETY RELATED
IEEE-344-1987, IEEE C37.98-1987
USRNC REGULATORY GUIDE 1.100 REV 2 JUNE 1988

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DC-94 SOLID STATE PROGRAMMER

The DC-94 solid state programmer is a static trip device designed to provide more precise tripping characteristics when retrofitted on DC air circuit breakers than the thermal trip units which it replaces. It is a complete Retrofit kit including the Logic Controller, Current Sensors, and a Relay.

The programmer comes with Long Time, Short Time, and Instantaneous functions as standard equipment. Trip indicators, a trip indicator reset switch, a pick-up light, amp tap switch, power indicator light, and loss of control voltage protection are all standard features.

The single unit configuration contains a switching power supply that is protected against transient voltage.

LOSS OF VOLTAGE PROTECTION

In the event there is a voltage drop, below approximately 180 volts on a 250 volt system, the DC-94 Programmable Logic Control will loose power causing the breaker to trip and all three indicators will flip.

LIST OF FEATURES

1. Instantaneous Pick-Up
2. Short Time Pick-Up
3. Long Time Pick-Up
4. Target Reset Switch
5. Long Time Delay Band Adjustment
6. Short Time Delay Band Adjustment
7. Trip Indicating Targets
8. Pick-Up LED
9. Power LED
10. Amp Tap Switch

INSTANTANEOUS PICK-UP (#1)

This function determines the level at which the breaker will trip without intentional time delay. This instantaneous interruption occurs only as a result of a severe short circuit.

SHORT TIME PICK-UP (#2)

This function controls the amount of high current the breaker can carry for short periods of time without tripping. A ten-step switch allows selectivity between 200% and 1000% of the current sensor rating times the Amp Tap Switch setting.

Example:
600 amp current sensor with Amp Tap Switch setting at .5 equals 300 amps. Short Time Pick-up set at 10 times equals 3000 amp Short Time Current rating.

LONG TIME PICK-UP (#3)

The Long Time Pick-Up provides additional adjustable current capabilities of the breaker with ten steps from 40% to 100%. Changing this setting does not affect any other function.

Example:
1600 amp current sensor with Amp Tap Switch setting at 1 equals 1600 amps. Long Time Pick-up set at .4 times equals 640 amp Long Time Current rating.

TARGET RESET SWITCH (#4)

This switch resets the Trip Indicating Targets after a fault condition.

LONG TIME DELAY BAND ADJUSTMENTS (#5)

This three-step adjustment varies the length of time that the breaker will operate under sustained overload without tripping.

SHORT TIME DELAY BAND ADJUSTMENT (#6)

This three-step delay adjustment provides further coordination between circuit breakers. It allows the breaker a time interval before responding to the selected short circuit current level.

TRIP INDICATING TARGETS (#7)

These fault indicators identify the cause of an over-current trip and help reduce system down time. Electronic flip-flag indicators analyze the fault and provide a memory of the trip. As an option, fault indicators can be remotely mounted and wired to the breaker.

PICK-UP LED (#8)

This function provides visual indication of an overload condition and pick-up of the long time timing function.

POWER LED (#9)

The feature provides visual indication for the logic power supply.

AMP TAP SWITCH (#10)

The six-step adjustable ampere setting from 50% to 100% varies the level of current the logic monitors from the Current Sensor. Changing this setting has the same effect as changing the value of the Sensor.

Example:
1600 amp current sensor with Amp Tap Switch setting at .5 equals 800 amps maximum current with Long Time, Short Time, and Instantaneous Pick-Ups coordinated to the 800 amp level.

CONNECTION DESIGNATIONS

Power Supply Inputs

Orange	Positive bus on line side of breaker.
Blue	Negative bus on line side of breaker.
Green	Field Ground.

Latch

White	Positive to latch.
Black	Negative to latch.

GENERAL INSTALLATION INSTRUCTIONS

Install the positive sensor on the bus bar making certain the terminal side is facing the positive supply. Center the sensor on the bus bar and secure it.

Mount the logic and latch per our standard AC circuit breaker mounting instructions.

Connect the Orange, positive (+), wire from the power supply to the line side of the positive bus on the breaker. Connect the Blue, negative (-), wire from the power supply to the line side of the negative bus on the breaker. ***Never Hi-Pot the breaker with the Orange and Blue wires installed.***

Connect the White and Black wires from the wiring harness to the latch. White to White and Black to Black.

Using the four conductor shielded cable, connect the Red wire from the wiring harness to the number one (1) terminal on the sensor. Connect the Black wire from the wiring harness to the number two (2) terminal on the sensor. Connect the Green wire from the wiring harness to the number three (3) terminal on the sensor. Connect the White wire from the wiring harness to the number four (4) terminal on the sensor.

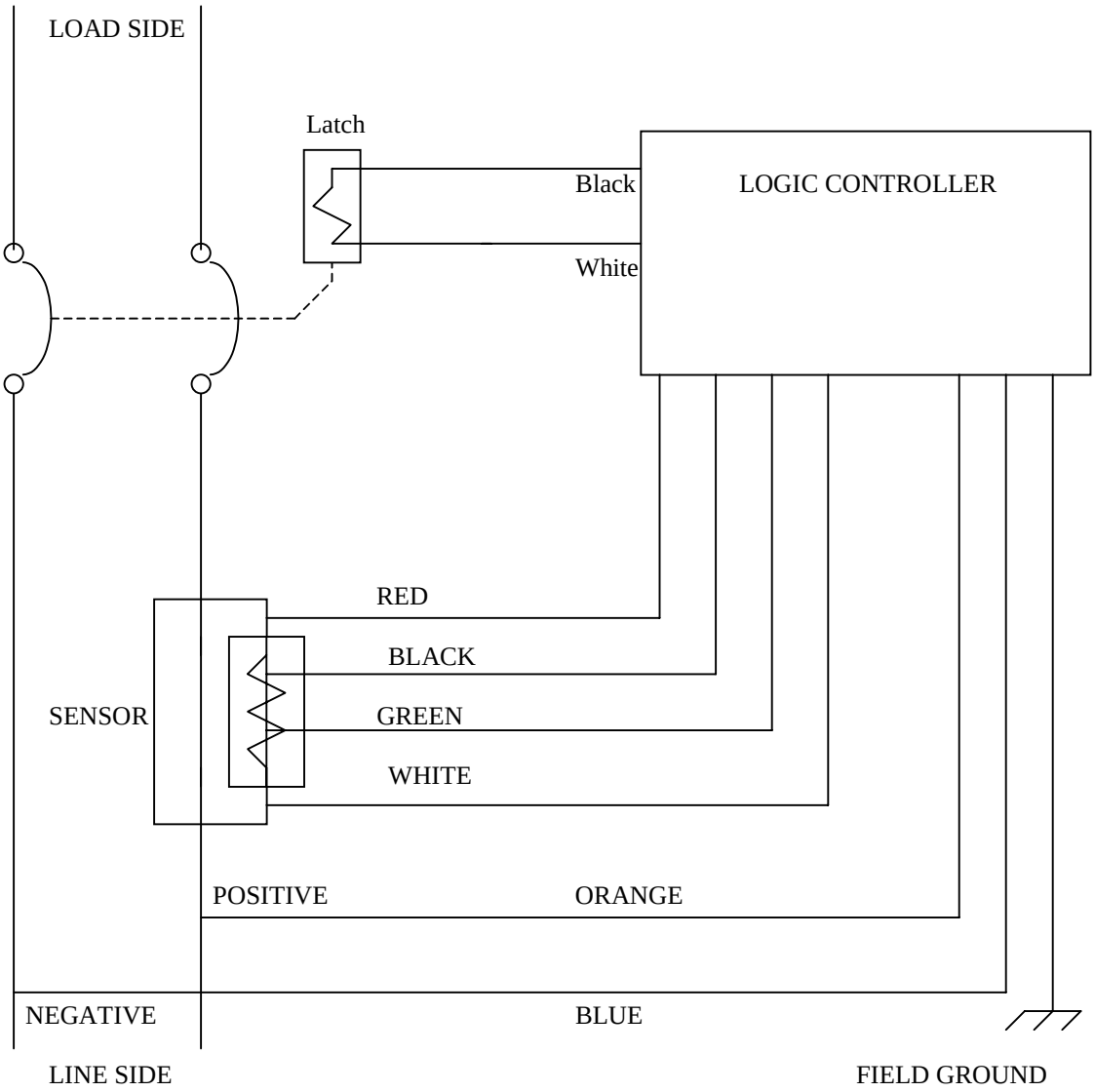
After wiring, the breaker should be tested per the trip curves in the DC Brochure. When primary injection testing the breaker, the Blue and Orange wires may be connected to 120 VAC on 125 VDC systems and 220 VAC on 250 VDC systems.

Dual Sensor Installation

The positive sensor is put on the positive bus as per above and the negative sensor is put on the negative bus, with the terminals facing towards the negative supply. The jumper wire is placed from the positive sensor to the negative sensor.

Terminal 1 to Terminal 1 using the Red wire.
Terminal 2 to Terminal 2 using the Black wire.
Terminal 3 to Terminal 3 using the Green wire.
Terminal 4 to Terminal 4 using the White wire.
The shield in the jumper wire is connected to the #2 terminal of the ***Positive Sensor Only.***

DC-94 CONNECTION DIAGRAM



Caution:
Do not Hi-Pot the Breaker with wiring installed on logic Controller. This may cause extensive damage to the unit.

WIRING HARNESS

White	Latch White
Black	Latch Black
Shielded Cable	
Red	Sensor Terminal #1
Black	Sensor Terminal #2
Green	Sensor Terminal #3
White	Sensor Terminal #4

SENSOR TERMINALS

#1	Red
#2	Black
#3	Green
#4	White