



ECCIII Motor Current Transducers

SUPERSEDES:
M51SV-MCT000310

FORM NO:
M51SV-MCT000406

ECCIII Motor Current Transducers

INTRODUCTION

The ECCIII monitors the actual current of all compressors and fan motors. This allows the ECCIII to detect activation of the high pressure cutouts or the fan motor overloads. It also provides an indication of the actual motor load. The current transducer consists of a current transformer and a current loop transmitter.

OPERATION

The current in the loop is 4mA when the measured current is 0A. The current is 20mA when the current is 100A. The analog input circuit of the ECCIII control module CM1 passes the loop current through an internal 50 Ω resistor to convert it to a voltage. The input circuit of CM2 uses a 100 Ω resistor. The following table shows the current reading and corresponding loop currents and voltages for the supply fan, return fan, and compressor 1. The analog input voltage can be measured from terminal G0 of CM1 to the appropriate terminal (B6, B7, or B8 of CM1).

Current A	Current mA	Voltage VDC
0	4	0.2
25	8	0.4
50	12	0.6
75	16	0.8
100	20	1.0

The phase two conductor for each motor passes through the transducer's "donut." Units with multiple compressors on each system use only one transducer per system. The phase two power wire going to each compressor in the bank passes through the donut in the same direction. This allows the ECCIII to measure the total current of the compressor bank.

CONFIGURATION

The current transducers have a range selection jumper. This jumper should be installed in the "MID" position. This configures the transducer for a range of 0 – 100A.

It is important to calibrate the current readings using the offset feature in the ECCIII's configuration menu. The reading should be calibrated to zero when the motor is not running.

TROUBLESHOOTING

If the ECCIII is indicating a current sensor failure for the supply fan, return fan, or compressor 1, measure the DC loop current and voltage with a multimeter. If the voltage and current do not correspond to the chart above, measure the resistance of the internal 50 Ω resistor on CM1. Take this measurement from G0 on CM1 to the appropriate input terminal (B1, B2, or B3). Disconnect the wire from the input terminal and tighten the screw before taking this measurement. CM1 must

be powered on and running while taking this measurement. If the measured resistance is not between 47Ω and 53Ω , the input resistor is damaged and CM1 should be replaced. Also, the sensor should be tested by connecting a multimeter between the wire from the input terminal and G0. If the current does not correspond to the chart above, replace the sensor.

If the ECCIII is indicating a current sensor failure for compressor 2, measure the DC loop current and voltage with a multimeter. If the current and voltage do not correspond to the chart below, measure the resistance of the internal 100Ω resistor on CM2. Take this measurement from G0 on CM2 to the input terminal B4. Disconnect the wire from the input terminal and tighten the screw before taking this measurement. If the measured resistance is not between 95Ω and 105Ω , the input resistor is damaged and CM2 should be replaced. Also, the sensor should be tested by connecting a multimeter in series with the wire from the input terminal and G0. If the measured current does not correspond to the chart below, the sensor is defective and should be replaced.

Current A	Current mA	Voltage VDC
0	4	0.4
25	8	0.8
50	12	1.2
75	16	1.6
100	20	2.0

For more advanced troubleshooting methods, please contact the factory.