Product Service Guide – M3G150 Gen. 3

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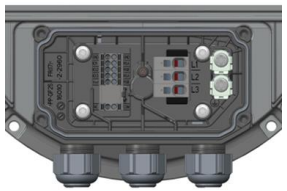
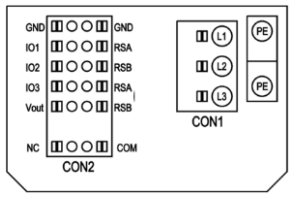
Step 1: Safety First
Section 1 of the "Operating instructions" covers all the safety regulations and information related to the device. Review this document before starting any work on the device. You can find operating instructions at our website here:
https://www.ebmpapst.us/en/products/operating_instructions/operatinginstructions.php

Step 2: Visual inspection
While following the safety precautions listed on section 1 of the operating instructions, visually assess the device condition. Check for broken or bent blades, struts or guard grilles. Check for locked rotor conditions due to "rubbing" between the rotor and its surroundings or foreign objects.

Step 3: Status LED
While the fan is still powered carefully approach it and check the Status LED located at the top of the fan motor junction box. If LED is not visible through the junction box cover, cut power to the motor, remove junction box cover and restore power to the fan. **Caution: Fan may start rotating.** Check the LED pulses against the following list:





#pulses	Error (LED red)	
1	Phase failure	Automatic restart once phase failure is corrected.
3	Power module overheated	Power cycle required
4	Internal communication error between master/slave controller	„Master" = electronics, „slave" = motor, Power cycle. This error will also show up if electronics powered via 20VDC.
6	Motor overheated	Power cycle required
7	Hall sensor error	Power cycle required. Contact OEM
8	Motor blocked	Automatic restart after blockage is cleared
9	Speed limit exceeded	Automatic restart
11	Rotor position sensor calibration error	Power cycle required
13	DC-link undervoltage	Automatic restart after undervoltage is cleared

#pulses	Warning (LED yellow)	
1	Current limitation in action	Current limited to prevent damage of the electronics
2	Line impedance too high	DC link voltage is instable
3	Power limiter in action	Derating is active
4	Output stage temperature high	Temperature > 105°C
5	Motor temperature high	Temperature > 130°C
6	Temperature inside electronics high	Temperature > 105°C
7	DC-link voltage low	DC-link < 460V (400V-Ver.) or 240V (200V-Ver.)
8	Braking mode	Error after 20s when motor start was not possible
9	Calibration of rotor position	Calibration of rotor position sensor in progress
10	Actual speed is lower than run monitoring speed limit	Only if set value > 0
11	Cable break at analog or PWM input for analog set value	Check Wiring
13	DC-link voltage high	DC-link > 850V (400V-Ver.) or 425V (200V-Ver.)
15	Line-voltage high	U1_peak>850V DC (600Vac);
16	Shedding function active	Shedding function is active and fan is blocked

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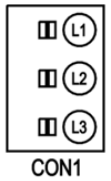
Step 4: No LED? Check Fuses
Turn OFF the power mains or breaker box. Check all the fuses and connections. Make sure connections are on the wire strand and not on the wire insulation.
Are the fuses OK?
If fuses are ok, proceed to "Step 7"
If fuses blown, proceed to "Step 5"

Step 5: Phase Resistance
Caution: Power wires need to be removed. Make sure power is OFF. Check resistances across the CON1 phases

L1→L2:_____
L1→L3:_____
L2→L3:_____



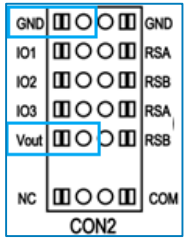
Resistances should be similar for all 3 readings. Resistance readings vary slightly by product, but should generally be in the 1-2 MΩ range, and should not vary by more than 0.2MΩ.

Step 6: Resistance OK?
If resistances are ok, replace fuses. If resistances are not ok, replace fan and check system wiring for any faults.

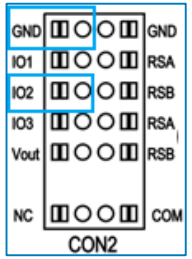
Step 7: "Power cycle" the fan
Cut power to the unit by turning OFF the power mains or breaker box. Turn Power back ON after 3 to 5 minutes to complete the power cycle. Re-check fan status. Continue to the next step if issue is not resolved.

Step 8: Phase voltage
Check mains voltage at each phase on the CON1 connector. Phases should all be present and similar in value. Make sure the voltage is within the acceptable voltage range as listed on motor nameplate.

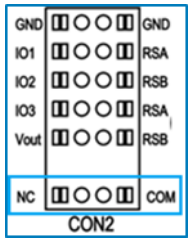
Step 9: Voltage output
Check "Vout" output on CON2 connector (between "Vout" and GND). If the motor is energized, but there is no 10VDC output present, the motor is damaged.



Step 10: Control signal
Check control input at the CON2 (IO2 & GND). Confirm there is a control voltage present at the CON2 connector. If there is no control signal present, contact the OEM to receive the correct wiring for this equipment.



Step11: Status relay
Check the alarm contact NC and COM in CON2. to determine if there are any fault conditions. Check for continuity



Condition	No Fault Condition	Fault Condition
NC-COM	Closed	Open

The table refers to conditions while the motor is actively energized

Step 12: EC-Control
Use a Modbus/RS485 connection to determine the fault condition. The ebm-papst's EC Control Software is available free at our website www.ebmpapst.us under the support and download section.