



# WLKATA MIROBOT G CODE INSTRUCTION SHEET

Note: Below is a **selected** list of the G-CODE movement instruction. The user can send G-CODE instructions to the robotic arm through WLKATA Studio COMMAND panel, or through third party's serial port tools. To read the full list of G-CODE instruction manual, please refer to: <https://document.wlkata.com>.

## SHEET 1 : MOVEMENT INSTRUCTION SET

Instruction	Command	Sample	Explain
Homing	<b>\$H</b>	\$H	Robotic arm starts homing
Return to zero position	<b>\$M</b>	\$M	All of the six axes of the robotic arm return to zero position (initial position)
Movement speed	<b>F{1}</b>	F2000	Set the movement speed to 2000 mm/min
Cartesian mode	<b>M20</b>	M20	Switch to Cartesian mode
Angle mode	<b>M21</b>	M21	Switch to Angle mode
Motion mode	<b>G90/G91</b>	M21 G90 X10	Control the 1st axis to move to a 10-degree position
Fast motion	<b>G00</b>	M20 G90 G00 X180 Y50 Z150	In Cartesian mode, control the end of the robotic arm move quickly to the XYZ (180, 50, 150) position in the base coordinate system.
Linear interpolation motion	<b>G01</b>	M20 G90 G01 X250 Z100 F1000	In the Cartesian mode, control the robotic arm to linearly interpolate to the XYZ (250, 0, 100) in the base coordinate system at a speed of 1000 mm/min.
Circular interpolation movement	<b>G02/G03 R{1}</b>	M20 G91 G03 X60 Y0 Z0 R60	Control the robotic arm to draw a circular arc (minor arc) with a radius of 60mm clockwise with the relative coordinate XYZ (60, 0, 0) as the endpoint. The distance between the start point and the endpoint should be less than or equal to 2 times the arc radius value (arc diameter). Otherwise, the robotic arm returns: "Error, E116, Arc radius error"
Door-shaped trajectory movement	<b>G05</b>	M20 G90 G05 X198.6 Y0 Z165.7 A-20 B-60 C0	In Cartesian mode, control the end of the robotic arm to move the door-shaped trajectory to the position of XYZ (250, 0, 100) and the position of (-20, -60, 0) RPY angle in the base coordinate system
Timed pause	<b>G04 P{1}</b>	G04 P1.5	Pause for 1.5 seconds



# WLKATA MIROBOT G-CODE INSTRUCTION SHEET

Note: Below is a **selected** list of the G-CODE additional instructions. The users can send G-CODE instructions to the robotic arm through WLKATA Studio COMMAND panel, or through third party's serial port tools. To read the full list of G-CODE instruction manual, please refer to: <https://document.wlkata.com>.

## SHEET 2 : AUXILIARY INSTRUCTION SET

Instruction	Command	Sample	Explain
Unlock each axis	<b>M50</b>	M50	Unlock each axis
Air pump/gripper control	<b>M3 S{1}</b>	M3 S500	Air pump starts blowing
Status query	<b>?</b>	<b>?</b>	<p><b>Return Value:</b> &lt;Alarm,Angle(ABCDXYZ):0.000,0.000,0.000,0.000,0.000,0.000,0.000,Cartesian coordinate(XYZ RxRyRz):198.670,0.000,230.720,0.000,0.000,0.000,Pump PWM:0,Valve PWM:0,Motion_MODE:0&gt;</p> <p><b>Return Explanation:</b></p> <ol style="list-style-type: none"><li>1. "Alarm" indicates the robotic arm is in the locked state.</li><li>2. Values after "Angle (ABCDXYZ)" are the angle values of each axis of the robotic arm. In the order of axis 4,5,6,7,1,2 and 3, where 7 is the extender sliding rail. In this example, the fourth axis is 0°, the fifth axis is 0°, the sixth axis is 0°, the external sliding rail (if any) 0, the first axis is 0°, the second axis is 0°, and the third axis is 0°.</li><li>3. Values after "Cartesian coordinate (XYZ RxRyRz)" are the position and posture values of the end of the robotic arm. In this example, the position is (198.67, 0, 230.72), the posture is (0, 0, 0)</li><li>4. The two output PWM values are both 0.</li></ol>
Adjust the initial position value of each axis after homing	<b>\$150=73</b> <b>\$151=30</b> <b>\$152=0</b> <b>\$153=0</b> <b>\$154=100</b> <b>\$155=32</b> <b>\$156=57</b>	\$150=0 \$151=0 \$152=180 \$153=0 \$154=0 \$155=0 \$156=0	<p>These instructions should mainly be used for two situations.</p> <ol style="list-style-type: none"><li>1. Robotics arm does not return to the initial position after homing</li><li>2. Precise calibrate individual axis after the built-in calibration for the specific use of the robotic arm, e.g., drawing function.</li></ol> <p>\$150: axis-4 initial position, range (-180, 180) \$151: axis-5 initial position, range (-180,40) \$152: axis-6 initial position, range (-180,180) \$153: axis-7, external axis, e.g., sliding rail \$154: axis-1 initial position, range (-100,100) \$155: axis-2 initial position, range (-60,90) \$156: axis-3 initial position, range (-180,50)</p>



# WLKATA MIROBOT ERROR AND WARNING G-CODE TROUBLESHOOTING SHEET

Note: Below is a **selected** list of error G-CODE and troubleshooting. To read the full list of error and warning G-CODE and troubleshooting manual, please refer to: <https://document.wlkata.com>.

## SHEET 1 : ERROR CODE

Definition	Error Code	Error Sample	Troubleshooting
Robotic arm is busy and cannot respond to new commands	<b>E107,Not idle</b>	Send "\$h" to the robotic arm when it is executing other commands. <pre>M20 G90 G00 X198.6 Y0 Z150 A0 B0 C0 ok M20 G90 G00 X198.6 Y0 Z120 A0 B0 C0 \$h G01 F2000 ok Info,E107,Not idle</pre>	Wait for the movement of the robotic arm to stop before sending a new command.
Robotic arm is in alarm as locked state and cannot move	<b>E108,Alarm lock</b>	Robotic arm is in locked state after an emergency halt, and it cannot accept new motion commands. <pre>M20 G91 G01 Z-1 ok M20 G91 G01 Z-1 % Error,A103,Abort during cycle ? ok  WLKATA Robot started successfully.Firmware version:20220216 ['\$H','\$X' to unlock] M20 G90 G00 X208.60 Y5.00 Z171.40 A0.00 B0.00 C0.00 F2000.00 Info,E108,Alarm lock</pre>	Send "\$h" command to home.
Homing operation is not enabled	<b>E109, Homing not enabled</b>	The error occurs when "\$22=0" (homing operation disabled). The soft limit function cannot be used, so "\$20=1" (enable soft limit) command cannot run. <pre>\$22=0 ok \$20=1 Info,E109,Homing not enabled</pre>	Firstly, send "\$22=1" to enable homing function, and then send "\$20=1" to enable soft limit.
The given location is outside of the robotic arm workspace	<b>Error,E118,The given location is outside the workspace</b>	<pre>M20 G90 G00 X400 Y0 Z200 A0 B0 C0  Error,E118,The given location is outside the workspace. ok</pre>	Edit the location values and resend the instruction.



# WLKATA MIROBOT ERROR AND WARNING G-CODE TROUBLESHOOTING SHEET

Note: Below is a **selected** list of warning G-CODE and troubleshooting. To read the full list of error and warning G-CODE and troubleshooting manual, please refer to: <https://document.wlkata.com>.

## SHEET 2 : WARNING CODE

Definition	Warning Code	Warning Sample	Troubleshooting
Hard limit alarm	<b>A101,Hard limit</b>	Axis-2 hard limit alarm, meaning axes 1, 2, 3, and 7 have turned on the hard limit protection to prevent hardware damage. <div>Error,A101,Hard limit:Y [Reset to continue]</div>	①In the soft limit off state (\$20=0), a certain axis rotation angle exceeding the working space will trigger the hard limit alarm. Restore by restarting the robotic arm and homing. Or ②Hardware failure, e.g., sensor damage or line failure. Please don't hesitate to get in touch with after-sales.
Soft limit alarm	<b>A102,Soft limit</b>	Axis-2 rotation angle beyond the soft limit. <div>M21 G91 G01 Y-50 Error,A102,Soft limit:Y</div>	①Click and execute "ZERO Position" in WLKATA Studio. Or ②Rotate the axis in the opposite direction through commands or control panel to resolve the alarm.
Unexpected failure of the reset action	<b>A105,Homing fail</b>	Homing operation timeout. <div>\$h G01 F2000 Info,in homing moving... Error,A105,Homing fail</div>	Motor or sensor failure, please don't hesitate to get in touch with after-sales.
Axes cannot be moved after powering on and are in the locked state	<b>A106,Locked status of each axis</b>	Robotic arm is in locked state. <div>M21 G90 G00 X15.00 Y0.00 Z0.00 A0.00 B0.00 C0.00 F2000.00 Error,A106,Locked status of each axis</div>	①Send "\$h" to perform the homing operation to unlock. Or ②Send "M50" to unlock the robotic arm.