



# G-Code To Motion Application Function Block

A Software tool to implement continuous path applications

Applications such as gluing, welding, pattern cutting, gasket laying and textile cutting often require continuous path contoured motion of the type most easily programmed using G-code programming. The OrmAppGcode\_v3 function block provides a simple way to incorporate path following in your application.

OrmAppGcode\_v3 is compliant with the ISO-6983-1 “Data format for positioning, line motion and contouring control Systems” standard, commonly known as G-code programming.

Third-party software such as “CAM V22” from <http://www.bobcad.com/>, allows you to convert AutoCAD DXF files to G-code programs describing a path. You can then edit the resulting file to add any M-codes or other instructions needed for your application.

OrmAppGcode\_v3 provides up to three-axis linear interpolation, three-axis (3-dimensional) circular interpolation, two-axis selectable plane circular interpolation, three and four-axis helical interpolation and rapid traverse. It supports incremental or absolute programming as well as inch and metric units. It includes continuous or single-step operation, feedrate override and a complement of M-codes.

The three-dimensional circular interpolation allows the X, Y and Z axes to describe an arc on the surface of any arbitrary sphere.

An optional fourth (C) axis, representing a rotation about the Z-Axis, makes OrmAppGcode\_v3 especially suitable for gluing applications. The C-axis can be programmed for independent motion or to automatically track the X-Y vector angle. This allows the glue dispenser to be automatically aligned with the direction of travel at all times.

Machines built for traditional CNC applications typically use relatively low feed rates and are of solid construction usually using large heavy castings. This approach to the mechanical design is necessitated by the demands of metal cutting applications.

However CNC software is increasingly used for applications other than metal cutting such as gantry robots and material handling. In these applications the mechanical design is often less solid. This makes the structure more susceptible to the reaction forces generated by axis accelerations and decelerations.

OrmAppGcode\_v3 linearizes accelerations and decelerations thus minimizing peak accelerations and reaction forces. It also allows the part program to adjust the accelerations and decelerations to suit particular operations in the machine cycle making it more suitable for such applications.

You should note systems that use S-curve accelerations, also known as "jerk limiting", actually increase the peak accelerations and associated reaction forces.

*The OrmAppGcode\_v3 function block provides the basic features needed for CNC-like applications such as those listed above. However, it may not be suitable for controlling lathes, milling machines, machining centers and other applications requiring features such as tool offsets, cutter radius compensation, canned cycles gauging and other advanced CNC features.*

## Supported Preparatory Codes:

Code	Modal Group	Modal	Function
G00		Yes	Point-to-point move
G01		Yes	Linear interpolation
G02	A	Yes	CW Circular interpolation
G03		Yes	CCW Circular interpolation
G72		Yes	3 dimensional circular interp.
G04	N/A	No	Programmable Dwell Time
G09	N/A	No	Positioning (exact stop) mode
G17		Yes	Selects X-Y plane for G02/G03
G18	B	Yes	Selects Z-X plane for G02/G03
G19		Yes	Selects Y-Z plane for G02/G03
G61	C	Yes	Positioning (exact stop) mode
G64		Yes	Contouring mode
G70	D	Yes	Selects inch and inch/minute
G71		Yes	Selects mm and mm/minute
G74	E	Yes	Enable C-axis auto tracking
G75		Yes	Disable C-axis auto tracking
G90	F	Yes	Selects absolute programming
G91		Yes	Selects incremental programming

## Supported M-Codes:

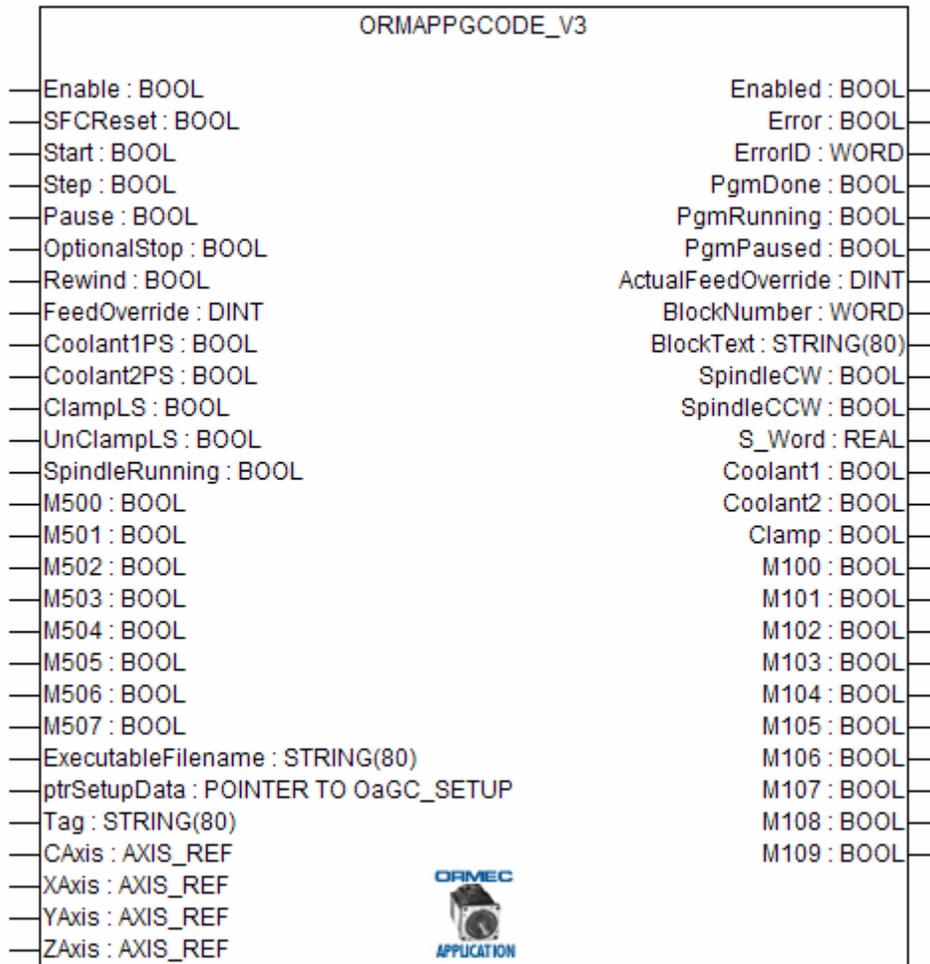
Code	Function
M00	Stops program
M01	Optional stop
M02	End of program
M03	Start spindle CW
M04	Start spindle CCW
M05	Stop spindle
M07	Coolant 1 on
M08	Coolant 2 on
M09	Coolant 1 and 2 off.
M10	Clamp
M11	Unclamp
M48	Feedrate override enable
M49	Feedrate override disable
M100	Output M100 on
"	
M109	Output M109 on
M200	Output M100 off
"	
M209	Output M109 off
M500	Wait for input 500 on
"	
M507	Wait for input 507 on
M600	Wait for input M500 off
"	
M607	Wait for input M507 off



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## OrmAppGcode\_v3 Function Block



## OrmAppGcodePostProcessor\_v3 Function Block

