

## G and M Commands

in the DIN/ISO Interpreter // for Remote from V1.47.5.2

Updated: February 2025

### 1. Overview G commands

Path command	Denotation	Hints
<b>G0 / G00</b>	Motion with <b>fast velocity</b>	Define fast velocity with FastVel
<b>G1 / G01</b>	<b>Linear interpolation</b> at Cartesian kinematics <b>S-PTP motion</b> at non Cartesian kinematics	Define feed rate with F
<b>G2 / G02</b>	<b>Circle interpolation</b> clockwise using Cartesian kinematics	with I/J/K values to define centre point
<b>G3 / G03</b>	<b>Circle interpolation</b> counter clockwise using Cartesian kinematics	with I/J/K values to define centre point
<b>G4 / G04</b>	<b>Delay time</b>	in msec or R variable
<b>G10</b>	Motion with <b>fast velocity</b> in conjunction with a frame variable Q0 ... Q499	NCP format: <b>FASTFRAME</b>
<b>G11</b>	Motion with <b>feed rate</b> in conjunction with a frame variable Q0 ... Q499	NCP format: <b>MOVEFRAME</b>
<b>G12</b>	<b>Helix</b> clockwise	with I/J/K values to define centre point, W defines the traverse angel
<b>G13</b>	<b>Helix</b> counter clockwise	with I/J/K values to define centre point, W defines the traverse angel
<b>G17</b>	Definition of interpolation plane ( <b>X-Y plane</b> )	NCP format: <b>PLANE XY</b>
<b>G18</b>	Definition of interpolation plane ( <b>X-Z plane</b> )	NCP format: <b>PLANE XZ</b>
<b>G19</b>	Definition of interpolation plane ( <b>Y-Z plane</b> )	NCP format: <b>PLANE YZ</b>
<b>G20</b>	Setting the unit inch for translatory axes	
<b>G21</b>	Setting the unit millimeter for translatory axes	
<b>G28</b>	Approach to machine zero point resp. work piece zero point in rapid motion via intermediate position (relative related to the starting position)	NCP format: <b>FASTZERO</b>
<b>G53</b>	Deactivate workpiece zero point shift	NCP format: WPCLEAR
<b>G54</b>	Activate workpiece zero point shift 1	G54 to G56 have separate registers to store the work
<b>G55</b>	Activate workpiece zero point shift 2	

<b>G56</b>	Activate workpiece zero point shift 3	piece coordinates, can also be modified with frames from the machine position Table NCP format: WPREGxWRITE x=1..3
<b>G60</b>	Switch off explicit path mode (path end)	NCP format: <b>PATH</b>
<b>G64</b>	Switch on explicit path mode (path start)	NCP format: <b>PATHEND</b>
<b>G70</b>	Definition of measure for translatory axis: <b>inch</b>	NCP format: <b>INCH</b>
<b>G71</b>	Definition of measure for translatory axis: <b>mm</b>	NCP format: <b>METRIC</b> Default setting
<b>G74</b>	<b>Reference run</b>	NCP format: <b>REF</b>
<b>G75</b>	<b>Teach-In:</b> The window „Current geometry file: ...“ can be activated during automatic mode	NCP format: <b>TEACH</b> Correction of all frames in the current geometry file is possible
<b>G76</b>	<b>Teach-In:</b> The dialog box „WpTeach- / G76 instruction in the application program“ can be activated during automatic mode	NCP format: <b>WPTEACH</b> Manually correction of axes position and optional activation of workpiece zero
<b>G77</b>	<b>Teach-In:</b> The dialog box „ManualMove- / G77 instruction in the application program“ can be activated during automatic mode	NCP format: <b>MANUALMOVE</b> Manually correction of axes position
<b>G80</b>	Define parameters of a drilling cycle: C or CY: CYcle P or RF: ReFERENCE height D or DE: DEpth T or TI: Time V or VE: Velocity VF: Velocity Fast (rapid motion) F or FI: First Increment Depth O or OT: OTHER Increment Depth I or IC: InCrement Depth Decrease cycle by cycle R or RE: Increment REtreat L or LE: Retreat S or SE: Security Height DI: Direction PL: Plane	NCP format: DRILLDEF
<b>G81</b>	<b>Simple drilling</b>	NCP format: <b>DRILLN</b>
<b>G82</b>	<b>Drilling with dwell</b>	NCP format: <b>DRILLT</b>
<b>G83</b>	<b>Drilling in operating mode countersick</b>	NCP format: <b>DRILLD</b>
<b>G86</b>	<b>Drilling in operating mode break chip</b>	NCP format: <b>DRILLB</b>

<b>G90</b>	Coordinate statements are absolute statements ( <b>absolute measure</b> )	Default setting
<b>G91</b>	Coordinate statements are incremental statements ( <b>incremental measure</b> )	
<b>G92</b>	<b>Set workpiece zero point register 1</b>	
<b>G93</b>	<b>Set workpiece zero point register 2</b>  <b>Alternatively: Specifying the time unit "Second" for the feed rate</b>	
<b>G94</b>	<b>F word defines the feed rate</b>	<b>mm/min (Default setting)</b>
<b>G98</b>	<b>Set negative software end switch</b>	depends from the Motion Control ability
<b>G99</b>	<b>Set positive software end switch</b>	depends from the Motion Control ability
<b>G150</b>	<b>Switch off: velocity proportional output of an analog voltage</b>	NCP format: <b>VPVOFF</b> Default setting
<b>G151</b>	<b>Switch on: velocity proportional output of an analog voltage</b>	NCP format: <b>VPVON</b> Default setting
<b>G152</b>	<b>Switch off velocity proportional output of a PWM signal</b>	
<b>G153</b>	<b>Switch on velocity proportional output of a PWM signal</b>	
<b>G168</b>	<b>XYZRotation ON</b>	
<b>G169</b>	<b>XYZRotation OFF</b>	
<b>G174</b>	<b>Reference cycle</b>	NCP format: <b>REFCYCLE</b>
<b>G181</b>	<b>Wait for trigger edge on binary input</b>	NCP format: WAITBIT
<b>G182</b>	<b>Wait for special port value on binary input port</b>	NCP format: <b>WAITPORT</b>
<b>G195</b>	<b>Get axes acceleration (jerk) from Motion Control</b>	NCP format: <b>GETACCE</b>
<b>G196</b>	<b>Set axes acceleration (jerk) to Motion Control</b>	NCP format: <b>SETACCE</b>
<b>G197</b>	<b>Change axes</b>	NCP format: <b>CHANGE</b>
<b>G198</b>	<b>Parameter input</b> for technological variable (R variable)	NCP format: <b>PARAMETER</b>
<b>G199</b>	<b>Display text</b> in the status line	NCP format: <b>TYPE</b>

## 2. Overview M commands

Miscellaneous command	Denotation	Hints
M00	Programmed program break (abort) -> With user interaction	NCP format: <b>ABORT</b>
M01	Programmed program break (stop) -> With user interaction	NCP format: <b>QUIT</b>
M2 / M02	Programmed program abort -> in contrast with M30 a turned on spindle will not be switched off ! -> Without user interaction	NCP format: <b>PROGABORT</b>
M3 / M03	Switch on spindle (clockwise)	NCP format: <b>SCLW</b>
M4 / M04	Switch on spindle (counter clockwise)	NCP format: <b>SCCLW</b>
M5 / M05	Spindle switch off	NCP format: <b>SOFF</b>
M6 / M06	Execute tool change	The current tool is defined by <b>Tn</b> , n=1...128
M8 / M08 M9 / M09	Coolant on Coolant off	NCP format: <b>Coolant on</b> <b>Coolant off</b>
M10 / M11	Workpiece clamp on / off	NCP format: <b>WpClamp on / off</b>
M18 / M19	Pump on / off	NCP format: <b>Pump on / off</b>
M20 / M21	Test mode off / on	NCP format: <b>TOff / Ton</b>
M22 / M23	Teach mode off / on	NCP format: <b>TeachOff /</b> <b>TeachOn</b>
M30	Program end	NCP format: <b>PROGEND</b>
M35 / M36	Lamp on / off	NCP format: <b>Lamp on / off</b>
M37 / M38 M39 / M40	Periphery option 1 on/off Periphery option 2 on/off	NCP format: <b>Poption1 on / off</b> <b>Poption2 on / off</b>
M41 / M42	Coolant 2 on / off	NCP format: <b>Coolant2 on / off</b>
M43 / M44 M45 / M46	Suction 1 on / off Suction 2 on / off	NCP format: <b>Suction1 on / off</b> <b>Suction2 on / off</b>

<b>M50 / M51</b>	<b>Lock / unlock 4<sup>th</sup> axis, i.e. clamp / unclamp axis 4</b>	NCP format: <b>Lock4 / Unlock4</b>
<b>M52 / M53</b>	<b>Lock / unlock 5<sup>th</sup> axis, i.e. clamp / unclamp axis 5</b>	NCP format: <b>Lock5 / Unlock5</b>
	<b>Get inputs</b>	Like in ProNC: <b>GetBit</b> <b>GetPort</b> <b>GetAnalog</b>
<b>Mpby</b>	<b>Set output bit: p=port 1...32 b=bit 1...8 y=value 0 1</b> <b>Set output port</b> <b>Output analog voltage</b> <b>Output PWM signal</b>	Like in ProNC: <b>SetBit</b> <b>SetPort</b> <b>SetAnalog</b> <b>SetPWM</b>
	<b>Query current positions (A is 1 or 2, n is X,...,W)</b> <b>Query current date</b> <b>Query current time</b> <b>Query current value for R variable from operator</b>	Like in ProNC: <b>PosA.n</b> <b>GetDate</b> <b>GetTime</b> <b>GetValue</b> <b>GETDESTINATIONPOS</b> <b>GETCURRENTPOS</b> <b>GETVELO</b> <b>GETSPNSPEED</b> <b>GETSTATEMCTL</b> <b>GETSTATESPN</b> <b>GETSTATESECC</b> <b>GETTICKCOUNT</b> <b>GETLANGUAGE</b> <b>GetLastErrorCode</b> <b>GetLastErrorText</b> <b>GetLatchedPosition</b> <b>GETVALUE</b> <b>GETCHAR</b> <b>GETSTRING</b> <b>GETGEAR</b> <b>GETELAPSEDTIME</b> <b>GETFILETYPE</b> <b>GETTOOLREFPOS</b>

### 3. Special signs due to DIN 66025 / other commands

Special signs	Denotation
<b>X,Y,Z,A,B,C,U,V,W</b>	Address letter for 9 numerical axes X,Y,Z: Linear axes A: Rotatory axis (A rotates around X axis) B: Rotatory axis (B rotates around Y axis) C: Rotatory axis (C rotates around Z axis) U,V,W: Linear axes, parallel to X,Y,Z
<b>I, J, K</b>	Center point in X, Y or Z direction (according to DIN 66025 always relative to the start position)
<b>E</b>	Fast velocity in mm/sec (G93) or mm/min (G94 is the default setting)
<b>F</b>	Feed rate in mm/sec (G93) or mm/min (G94 is the default setting)
<b>S</b>	Revolution of spindle in rpm
<b>T</b>	Tool number
<b>R</b>	R variable (see: Programming Instruction ProNC)
<b>Q</b>	Q variable (see: Programming Instruction ProNC)
<b>%</b>	% natural number : Start of <b>main program</b>
<b>(</b>	<b>Start of comment</b> , if comment shall extend over several lines or comment will be used as separator in the NC set
<b>)</b>	<b>End of comment</b> , if comment shall extend over several lines or comment will be used as separator in the NC set
<b>;</b>	<b>Start of comment</b> (single line comment)
<b>CR</b> (Carriage Return)	<b>End of comment</b> (single line comment)
<b>+</b>	Algebraic sign at decimal numbers or arithmetical operator: <b>Addition</b>
<b>-</b>	Algebraic sign at decimal numbers or arithmetical operator: <b>Subtraction</b>
<b>*</b>	Arithmetical operator: <b>Multiplication</b>
<b>/</b>	Arithmetical operator: <b>Division</b>
<b>:</b>	Character to <b>select</b> a coordinate component of a Q variable or a symbolic frame
<b>?</b>	Character for <b>set skip</b>
<b>=</b>	Assign values to coordinate address letters using indexed axis addressing