

# G and M Commands in the DIN/ISO Interpreter for Remote from V1.46.8.3

Updated: March 2018

## 1 Overview G commands

Path command	Denotation	Hints
<b>G0 / G00</b>	Motion with <b>fast velocity</b>	Define fast velocity with <b>FastVel</b>
<b>G1 / G01</b>	<b>Linear interpolation</b> at Cartesian kinematics <b>S-PTP motion</b> at non Cartesian kinematics	Define feed rate with <b>F</b>
<b>G2 / G02</b>	<b>Circle interpolation</b> clockwise using Cartesian kinematics	with <b>I/J/K</b> values to define centre point
<b>G3 / G03</b>	<b>Circle interpolation</b> counter clockwise using Cartesian kinematics	with <b>I/J/K</b> values to define centre point
<b>G4 / G04</b>	<b>Dwell time</b>	in msec or <b>R</b> variable
<b>G10</b> <b>G11</b>	Motion with <b>fast velocity</b> in conjunction with a frame variable Q0 ... Q499 Motion with <b>feed rate</b> in conjunction with a frame variable Q0 ... Q499	NCP format: <b>FASTFRAME</b> NCP format: <b>MOVEFRAME</b>
<b>G12</b>	<b>Helix</b> clockwise	with <b>I/J/K</b> values to define centre point, <b>W</b> defines the traverse angel
<b>G13</b>	<b>Helix</b> counter clockwise	with <b>I/J/K</b> values to define centre point, <b>W</b> defines the traverse angel
<b>G17</b> <b>G18</b> <b>G19</b>	Definition of interpolation plane ( <b>X-Y plane</b> ) Definition of interpolation plane ( <b>X-Z plane</b> ) Definition of interpolation plane ( <b>Y-Z plane</b> )	NCP format: <b>PLANE XY</b> NCP format: <b>PLANE XZ</b> NCP format: <b>PLANE YZ</b>
<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>G40</b> <b>G41</b> <b>G42</b>	Cutter radius compensation cancel Cutter radius compensation left from contour Cutter radius compensation right from contour	<b>Default setting</b> <b>Not available</b> <b>Not available</b>

<b>G53</b>	<b>Deactivate</b> workpiece zero point shift	NCP format: <b>WPCLEAR</b>
<b>G54</b>	<b>Activate</b> workpiece zero point shift 1	<b>G54 to G59 have separate registers to store the work piece coordinates, can also be modified with frames from the machine position table</b> NCP format: <b>WPREGxWRITE x=1...6</b>
<b>G55</b>	<b>Activate</b> workpiece zero point shift 2	
<b>G56</b>	<b>Activate</b> workpiece zero point shift 3	
<b>G57</b>	<b>Activate</b> workpiece zero point shift 4	
<b>G58</b>	<b>Activate</b> workpiece zero point shift 5	
<b>G59</b>	<b>Activate</b> workpiece zero point shift 6	
<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>G68</b>	Switch on correction in the XY plane	NCP-Format: <b>XYCorrectOn</b> Specifically for Laser cutting; it assumes an investigation of the correction angle
<b>G69</b>	Switch off correction in the XY plane	NCP-Format: <b>XYCorrectOff</b> Default setting
<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: <b>CY</b> cle P or RF: <b>ReF</b> erence height D or DE: <b>DE</b> pth T or TI: <b>TI</b> me V or VE: <b>VE</b> locity VF: <b>VE</b> locity <b>F</b> ast (rapid motion) F or FI: <b>FI</b> rst Increment Depth O or OT: <b>OT</b> her Increment Depth I or IC: <b>IC</b> rement Depth Decrease cycle by cycle R or RE: Increment <b>RE</b> treat L or LE: Retreat S or SE: <b>SE</b> curity Height DI: <b>DI</b> rection PL: <b>PL</b> ane	NCP format: <b>DRILLDEF</b>
<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>Not used</b>	
<b>G93</b>	<b>F word defines the processing time depends from the Motion Control ability to do the so called Inverse Time Feed Mode (ITFM)</b> or <b>F word defines the feed rate</b>	<b>in sec</b> (when ITFM is active)  <b>or</b> <b>in mm/sec</b>
<b>G94</b>	<b>F word defines the feed rate</b>	<b>mm/min (Default setting)</b>
<b>G97</b>	<b>Specify spindle speed in rpm</b>	Default setting
<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>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: <b>WAITBIT</b>
<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 Tn, 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>

<b>M41 / M42</b>	<b>Coolant 2 on / off</b>	NCP format: <b>Coolant2 on / off</b>
<b>M43 / M44 M45 / M46</b>	<b>Suction 1 on / off Suction 2 on / off</b>	NCP format: <b>Suction1 on / off 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 GetPort GetAnalog</b>
<b>Mpby</b>	<b>Set output bit: p=port 1...32 b=bit 1...8 y=value 0 1 Set output port Output analog voltage Output PWM signal</b>	Like in ProNC: <b>SetBit SetPort SetAnalog SetPWM</b>
	<b>Query current positions (A is 1 or 2, n is X,...,W) Query current date Query current time Query current value for R variable from operator</b>	Like in ProNC: <b>PosA.n GetDate GetTime GetValue GETDESTINATIONPOS GETCURRENTPOS GETVELO GETSPNSPEED GETSTATEMCTL GETSTATESPN GETSTATESECC GETTICKCOUNT GETLANGUAGE GetLastErrorCode GetLastErrorText GetLatchedPosition GETVALUE GETCHAR GETSTRING GETGEAR GETELAPSEDTIME GETFILETYPE GETTOOLREFPOS</b>

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

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