

1. Modal information (read only)

| Variable address | Description |
|------------------|---|
| #4001 | Modal information G00,G01,G02,G03,G33 |
| #4002 | Modal information G17,G18,G19 |
| #4003 | Modal information G90, G91 |
| #4005 | Modal information G94, G95 |
| #4006 | Modal information G20, G21 |
| #4007 | Modal information G40, G41, G42 |
| #4008 | Modal information G43, G44, G49 |
| #4009 | Modal information G73, G74, G76, G80-G89 |
| #4010 | Modal information G98, G99 |
| #4014 | Modal information G53, G54-G59 |
| #4015 | Modal information G60, G64 |
| #4017 | Modal information G15, G16 |
| #4109 | Modal information F |
| #4119 | Modal information S |
| #4120 | Modal information T |
| #4114 | Sequence number |
| #4111 | Modal information H |
| #4107 | Modal information D |
| #7999 | Random number 1- 999999 |
| #8000 | Spindle encoder position, 0-4 times frequency encoder line number |
| #8004 | Spindle speed |
| #8008 | Processing time of workpiece |
| #4117 | SS0--4094 correspond to 0-10V |
| #4118 | SS means rotation speed RPM |

Parameter macro-variable out of list: the number+6000 behind P.

For example:

Param#P304G17= corresponds to: #6304;

Param#P680G1= corresponds to #6680

Param#P681G1= corresponds to #6681

Param#M0 ---- Param#M1000 corresponds to #0 ---- #1000

Param#I1 ---- Param#I24 corresponds to #1890 ---- #1913

Param#i1 ---- Param#i12 corresponds to #1919 ---- #1930

Param#S1 ---- Param#S26 corresponds to #1950 ---- #1975

Param#O1 ---- Param#O80 corresponds to #1990 ---- #2069

Param#o1 ---- Param#o2 corresponds to #2070 ---- #2071

Param#o3 ---- Param#o52 corresponds to #3903 ---- #3952

Param#o101 corresponds to #3900

Param#o102 corresponds to #3902

Param#E0 ---- Param#E199 corresponds to #4200 ---- #4399

Param#F0 ---- Param#F399 corresponds to #4400 ---- #4799

Param#F800 ---- Param#F899 corresponds to #4800 ---- #4899

Param#T0 ---- Param#T99 corresponds to #4900 ---- #4999

#3380--#3395 Alarm auxiliary relay: M80--M95

#8005 : Days since 1970/1/1

#8006 : Seconds since beginning of current day

#5211----#5218: Offset value of external work coordinate XYZABCXsYs

#920000--#920998 Offset value of each joint in robot translation No.0-No.99

2. Number of processed parts #3901(read only)

3. Current status (read only)

| Variable address | Description |
|--------------------------------|---|
| #5001--#5008 | Endpoint XYZABCXsYs machine coordinate of current program segment (unit:mm) |
| #5021--#5028 | Current machine coordinate XYZABCXsYs(unit:mm) |
| #5041--#5048 | Current work coordinate XYZABCXsYs(unit:mm) |
| #20001--#20005 | Recalculate the current position of XYZAB(machine coordinate mm) |
| #20011--#20015 | Recalculate the current position of XYZAB(workpiece coordinate mm) |
| | Note: read #20001--#20005/#20011--#20015 must delay over 200ms |
| #5081 | Current tool length compensation value(mm) |
| #5082 | Current tool radius compensation value(mm) |
| #5080 | Current tool number |
| #5091--#5095 | XYZAB offset value of current work coordinate(mm) |
| #161--#165 | XYZAB machine coordinate record after executing G31/G311 |
| [#161-#5091]-- [#165-#5095] | Current XYZAB axis work coordinate |

4. System parameter variable

| Variable address | Description |
|---|--|
| Lathe Tool compensation | |
| #1001--#1099 | H length compensation of T1-T99 in X axis (um) |
| #1101--#1199 | D radius compensation of T1-T99 in X axis (um) |
| #1201--#1299 | H length compensation of T1-T99 in Y/C axis (um) |
| #1301--#1399 | D radius compensation of T1-T99 in Y/C axis (um) |
| #1401--#1499 | H length compensation of T1-T99 in Z axis (um) |
| #1501--#1599 | D radius compensation of T1-T99 in Z axis (um) |
| #1601--#1699 | H length compensation of T1-T99 in A axis(um) |
| #1701--#1799 | D radius compensation of T1-T99 in A axis(um) |
| Milling Tool compensation | |
| #1001--#1099 | H length compensation of T1-T99 (um) |
| Input point X correspond to #40000--#40999 | For example: #40012 correspond to X12 |
| Output point Y correspond to #41000--#41999 | For example: #41013 correspond to Y13 |
| M correspond to #42000--#43999 | For example: #42078 correspond to M78 |
| #1800 | Input relay X00--X07(corresponds to D0--D7 bit) |
| #1801 | Input relay X08--X15(corresponds to D0--D7 bit) |
| #1802 | Input relay X16--X23(corresponds to D0--D7 bit) |
| #1803 | Input relay X24--X31(corresponds to D0--D7 bit) |
| #1804 | X32--X39(corresponds to D0--D7 bit) |
| #1805 | X40--X47(corresponds to D0--D7 bit) |

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| #1806 | B,C axis positive/negative limit X66--X73(corresponds to D0--D7 bit) |
| #1807 | Servo/Spindle alarm X74--X81(corresponds to D0--D7 bit) |
| #1808 | Output relay Y00--Y15(corresponds to D0--D15 bit) |
| #1809 | Output relay Y16--Y31(corresponds to D0--D15 bit) |
| #1810 | Output relay Y32--Y47(corresponds to D0--D15 bit) |
| #1811 | Auxiliary relay M00--M15(corresponds to D0--D15 bit) |
| #1812 | Self-define button X101--X112(corresponds to D0--D11 bit) |
| #1813 | Servo Enable Y50-Y57(corresponds to D0--D7 bit) |
| #1814 | Auxiliary relay M16--M31(corresponds to D0--D15 bit) |
| #1815 | Auxiliary relay M32--M47(corresponds to D0--D15 bit) |
| #1816 | Auxiliary relay M48--M63(corresponds to D0--D15 bit) |
| #1817 | Auxiliary relay M64--M79(corresponds to D0--D15 bit) |
| #1818 | Auxiliary relay M100--M115(corresponds to D0--D15 bit) |
| #1819 | Auxiliary relay M80--M95(corresponds to D0--D15 bit) |
| #1820 | Auxiliary relay M120--M135(corresponds to D0--D15 bit) |
| #1850 | X offset value of work coordinate G54(unit:mm) |
| #1851 | X offset value of work coordinate G55(unit:mm) |
| #1852 | X offset value of work coordinate G56(unit:mm) |
| #1853 | X offset value of work coordinate G57(unit:mm) |
| #1854 | X offset value of work coordinate G58(unit:mm) |
| #1855 | X offset value of work coordinate G59(unit:mm) |
| #1856 | Y offset value of work coordinate G54(unit:mm) |
| #1857 | Y offset value of work coordinate G55(unit:mm) |
| #1858 | Y offset value of work coordinate G56(unit:mm) |
| #1859 | Y offset value of work coordinate G57(unit:mm) |
| #1860 | Y offset value of work coordinate G58(unit:mm) |
| #1861 | Y offset value of work coordinate G59(unit:mm) |
| #1862 | Z offset value of work coordinate G54(unit:mm) |
| #1863 | Z offset value of work coordinate G55(unit:mm) |
| #1864 | Z offset value of work coordinate G56(unit:mm) |
| #1865 | Z offset value of work coordinate G57(unit:mm) |
| #1866 | Z offset value of work coordinate G58(unit:mm) |
| #1867 | Z offset value of work coordinate G59(unit:mm) |
| #1868 | A offset value of work coordinate G54(unit:mm) |
| #1869 | A offset value of work coordinate G55(unit:mm) |
| #1870 | A offset value of work coordinate G56(unit:mm) |
| #1871 | A offset value of work coordinate G57(unit:mm) |
| #1872 | A offset value of work coordinate G58(unit:mm) |
| #1873 | A offset value of work coordinate G59(unit:mm) |
| #1874 | X coordinate of 1st reference point(unit:mm) |
| #1875 | X coordinate of 2nd reference point(unit:mm) |
| #1876 | X coordinate of 3rd reference point(unit:mm) |
| #1877 | X coordinate of 4th reference point(unit:mm) |
| #1878 | Y coordinate of 1st reference point(unit:mm) |
| #1879 | Y coordinate of 2nd reference point(unit:mm) |
| #1880 | Y coordinate of 3rd reference point(unit:mm) |
| #1881 | Y coordinate of 4th reference point(unit:mm) |
| #1882 | Z coordinate of 1st reference point(unit:mm) |
| #1883 | Z coordinate of 2nd reference point(unit:mm) |

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| #1884 | Z coordinate of 3rd reference point(unit:mm) |
| #1885 | Z coordinate of 4th reference point(unit:mm) |
| #1886 | A coordinate of 1st reference point(unit:mm) |
| #1887 | A coordinate of 2nd reference point(unit:mm) |
| #1888 | A coordinate of 3rd reference point(unit:mm) |
| #1889 | A coordinate of 4th reference point(unit:mm) |
| #1890 | Metric/British system setting |
| #1891 | Name of 4th axis |
| #1892 | Function of 4th axis |
| #1893 | Rotary method of 4th axis |
| #1894 | Relative coordinate display of 4th axis when it is rotary axis |
| #1895 | Work coordinate display of 4th axis when it is rotary axis |
| #1896 | X axis backlash compensation(um) |
| #1897 | Y axis backlash compensation(um) |
| #1898 | Z axis backlash compensation(um) |
| #1899 | 4th axis axis backlash compensation(um) |
| #1900 | Feed axis electronic gear function(0: enable, 1: disable) |
| #1901 | Numerator of X axis electronic gear(1--999999999) |
| #1902 | Denominator of X axis electronic gear(1--999999999) |
| #1903 | Numerator of Y axis electronic gear(1--999999999) |
| #1904 | Denominator of Y axis electronic gear(1--999999999) |
| #1905 | Numerator of Z axis electronic gear(1--999999999) |
| #1906 | Denominator of Z axis electronic gear(1--999999999) |
| #1907 | Numerator of 4th axis electronic gear(1--999999999) |
| #1908 | Denominator of 4th axis electronic gear(1--999999999) |
| #1909 | Spindle electronic gear function(0: enable, 1: disable) |
| #1910 | Numerator of spindle low-gear electronic gear(1--999999999) |
| #1911 | Denominator of spindle low-gear electronic gear(1--999999999) |
| #1912 | Numerator of spindle high-gear electronic gear(1--999999999) |
| #1913 | Denominator of spindle high-gear electronic gear(1--999999999) |
| #1914 | X axis direction signal(0: reverse, 1: normal) |
| #1915 | Y axis direction signal(0: reverse, 1: normal) |
| #1916 | Z axis direction signal(0: reverse, 1: normal) |
| #1917 | 4th axis direction signal(0: reverse, 1: normal) |
| #1918 | Pulse-control spindle direction signal(0: reverse, 1: normal) |
| #1923 | X axis negative travel(mm/inch) |
| #1924 | Y axis negative travel(mm/inch) |
| #1925 | Z axis negative travel(mm/inch) |
| #1926 | 4th axis negative travel(mm/inch/deg) |
| #1927 | X axis positive travel(mm/inch) |
| #1928 | Y axis positive travel(mm/inch) |
| #1929 | Z axis positive travel(mm/inch) |
| #1930 | 4th axis positive travel(mm/inch/deg) |
| #1950 | X axis G00 speed(mm/min) |
| #1951 | Y axis G00 speed(mm/min) |
| #1952 | Z axis G00 speed(mm/min) |
| #1953 | 4th axis G00 speed(mm/min or deg/min) |
| #1954 | G01 default speed(mm/min) |
| #1955 | Simulation speed(mm/min) |

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| #1956 | Max feeding speed(mm/min) |
| #1957 | X axis acceleration speed((mm/min)/s) |
| #1958 | Y axis acceleration speed((mm/min)/s) |
| #1959 | Z axis acceleration speed((mm/min)/s) |
| #1960 | 4th axis acceleration speed((mm/min)/s) |
| #1961 | Spindle speed in manual mode(rpm) |
| #1962 | Feeding axis speed in manual mode(mm/min) |
| #1963 | X axis home speed in positive direction(mm/min) |
| #1964 | Y axis home speed in positive direction(mm/min) |
| #1965 | Z axis home speed in positive direction(mm/min) |
| #1966 | 4th axis home speed in positive direction(mm/min or deg/min) |
| #1967 | X axis home speed in negative direction(mm/min) |
| #1968 | Y axis home speed in negative direction(mm/min) |
| #1969 | Z axis home speed in negative direction(mm/min) |
| #1970 | 4th axis home speed in negative direction(mm/min or deg/min) |
| #1971 | Spindle maximum speed(rpm) |
| #1972 | Low-gear driver ratio of spindle(motor speed/spindle speed) |
| #1973 | High-gear driver ratio of spindle(motor speed/spindle speed) |
| #1974 | Initial running speed in manual mode(mm/min) |
| #1975 | Speed variant allowance in continuous track interpolation(mm/min) |
| #1990 | Work piece quantity |
| #1991 | Auto run times of M20 |
| #1992 | Delay time after loose/tighten tool(unit:s) |
| #1993 | Automatically tighten tool after loosing tool(1: Yes, 0: No) |
| #1994 | Language setting |
| #1995 | Direction of offset value Q in G76 |
| #1996 | Direction of offset value Q in G87 |
| #1997 | Track line width of simulation graphic(unit: pixel) |
| #1998 | Tool length compensation method |
| #1999 | Spindle type(0: spindle servo, 1: analog inverter) |
| #2000 | Spindle have high/low gear(0: No, 1: Yes) |
| #2001 | Spindle acceleration speed |
| #2002 | Start spindle during switching gear(0: No. 1: Yes) |
| #2003 | Time between spindle stop and wiggle during switch gear(0.01s) |
| #2004 | Time between spindle wiggle and gear change during switch gear(0.01s) |
| #2005 | Spindle wiggle speed during switch gear(0.01rpm) |
| #2006 | Initial wiggle direction of spindle during switch gear(0: positive, 1: negative) |
| #2007 | Spindle wiggle time positively during switch gear(0.01s) |
| #2008 | Spindle wiggle time negatively during switch gear(0.01s) |
| #2009 | Hold output on during spindle switch gear(0: No, 1: Yes) |
| #2010 | Display self-define alarm(0: No, 1: Yes) |
| #2011 | Display Alarm of feed axis and spindle(0: No, 1: Yes) |
| #2012 | Display Alarm of coolant overload(0: No, 1: Yes) |
| #2013 | Display Alarm of coolant shortage(0: No, 1: Yes) |
| #2014 | Display Alarm of lubricant overload(0: No, 1: Yes) |
| #2015 | Display Alarm of lubricant shortage(0: No, 1: Yes) |
| #2016 | Disable 5-axis interpolation function(0: No, 1: Yes) |

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| #2017 | Detect spindle position feedback(0: No, 1: Yes) |
| #2018 | Spindle feedback has electronic gear(0: No, 1: Yes) |
| #2019 | Spindle control mode(G74/G84/G33 thread processing and spindle orientation) |
| #2020 | Tool management(0: use M06, 1: T command to exchange tool) |
| #2021 | Tool selection mode(0: single direction, 1: bidirectional random) |
| #2022 | Feed axis home mode |
| #2023 | Max distance to check zero signal when homing |
| #2024 | Max tool seat number in fixed tool position |
| #2025 | Reference point number which Z axis need to go during tool change |
| #2026 | Spindle orientation degree during tool change |
| #2027 | Control mode of spindle orientation |
| #2028 | Start-up axis power status |
| #2029 | Max speed of Z axis when using MPG(mm/min) |
| #2030 | Max speed of XY and 4th axis when using MPG(mm/min) |
| #2031 | Detect spindle orientation and Z axis tool change point before changing tool(1: Yes) |
| #2032 | Reserved |
| #2033 | Reserved |
| #2034 | Reserved |
| #2035 | Reserved |
| #2036 | Reserved |
| #2037 | Reserved |
| #2038 | Reserved |
| #2039 | Reserved |
| #2040 | Reserved |
| #2041 | Reserved |
| #2042 | Reserved |
| #2043 | Reserved |
| #2044 | Reserved |
| #2045 | Reserved |
| #2046 | Spindle orientation degree in boring cycle |
| #2047 | Spindle home speed |
| #2048 | Spindle orientation speed |
| #2049 | Spindle position error tolerance |
| #2050 | Establishment mode of Tool radius compensation C |
| #2051 | Cancel mode of Tool radius compensation C |
| #2052 | Spindle orientation direction when controlled by pulse interpolation mode |
| #2053 | Delay time during spindle varying direction(unit:0.1s) |
| #2054 | Spindle acceleration/deceleration speed when controlled by pulse |
| #2055 | Enable tool selection and exchange function |
| #2056 | RS232 velocity |
| #2057 | Delay time of servo driver repower on(unit:0.1s) |
| #2058 | Interlock between Z axis and spindle tool gripper(0: Yes, 1: No) |
| #2059 | X axis offset value after home(unit:0.01mm) |
| #2060 | Y axis offset value after home(unit:0.01mm) |
| #2061 | Z axis offset value after home(unit:0.01mm) |
| #2062 | 4th axis offset value after home(unit:0.01mm) |

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| #2063 | Reserved |
| #2064 | Reserved |
| #2065 | Reserved |
| #2066 | Reserved |
| #2067 | Reserved |
| #2068 | Reserved |
| #2069 | Reserved |
| #2070 | Retract value d of G73(unit:mm) |
| #2071 | Retract value d of G83(unit:mm) |
| #2100--#2199 | Tool number corresponding to Tool seat 0--99 |
| #6000 | Spindle 1st gear speed |
| #6001 | Spindle 2nd gear speed |
| #6002 | Spindle 3rd gear speed |
| #6003 | Spindle 4th gear speed |
| #6007 | Interlock between spindle and chuck |
| #7999 | Random number 1- 999999 |
| #8000 | Spindle encoder position, 0-4 frequency doubling encoder line number |
| #8004 | Spindle current speed |
| #8011--#8018 | Command position pulse of 8 axis |
| #8021--#8028 | Feedback position pulse of 8 axis |
| #8031 | Other parameter P994 number of controller(factory code) |
| #8032 | Other parameter P995 number of machine(factory code) |
| #8033 | Other parameter P996 number of factory code |

5. Coordinate system variable of Bus CNC controller & Robot controller

(1) when unit is um:

| Variable address | Description |
|------------------|---|
| #1850--#1855 | X coordinate of G54--G59 |
| #1856--#1861 | Y coordinate of G54--G59 |
| #1862--#1867 | Z coordinate of G54--G59 |
| #1868--#1873 | A coordinate of G54--G59 |
| #2090--#2095 | B coordinate of G54--G59 |
| #2900--#2905 | C coordinate of G54--G59 |
| #2910--#2915 | Xs coordinate of G54--G59 |
| #2920--#2925 | Ys coordinate of G54--G59 |
| #2501--#2548 | X coordinate of G54.1--G54.48 |
| #2551--#2598 | Y coordinate of G54.1--G54.48 |
| #2601--#2648 | Z coordinate of G54.1--G54.48 |
| #2651--#2698 | A coordinate of G54.1--G54.48 |
| #2701--#2748 | B coordinate of G54.1--G54.48 |
| #2751--#2798 | C coordinate of G54.1--G54.48 |
| #2801--#2848 | Xs coordinate of G54.1--G54.48 |
| #2851--#2898 | Ys coordinate of G54.1--G54.48 |
| #1874--#1877 | X coordinate of reference point No.1-No.4 |
| #1878--#1881 | Y coordinate of reference point No.1-No.4 |
| #1882--#1885 | Z coordinate of reference point No.1-No.4 |
| #1886--#1889 | A coordinate of reference point No.1-No.4 |
| #2096--#2099 | B coordinate of reference point No.1-No.4 |

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|--------------|--|
| #2906--#2909 | C coordinate of reference point No.1-No.4 |
| #2916--#2919 | Xs coordinate of reference point No.1-No.4 |
| #2926--#2929 | Ys coordinate of reference point No.1-No.4 |

(2) when unit is mm:

| Variable address | Description |
|------------------|--------------------------|
| #5221--#5228 | X-Y-Z-A-B-C-Xs-Ys of G54 |
| #5241--#5248 | X-Y-Z-A-B-C-Xs-Ys of G55 |
| #5261--#5268 | X-Y-Z-A-B-C-Xs-Ys of G56 |
| #5281--#5288 | X-Y-Z-A-B-C-Xs-Ys of G57 |
| #5301--#5308 | X-Y-Z-A-B-C-Xs-Ys of G58 |
| #5321--#5328 | X-Y-Z-A-B-C-Xs-Ys of G59 |

(3) Variable for NK series driver parameter:

| Variable address | Description |
|------------------|--------------------------------|
| #100000--#199999 | J1 driver Parameter P0--P99999 |
| #200000--#299999 | J2 driver Parameter P0--P99999 |
| #300000--#399999 | J3 driver Parameter P0--P99999 |
| #400000--#499999 | J4 driver Parameter P0--P99999 |
| #500000--#599999 | J5 driver Parameter P0--P99999 |
| #600000--#699999 | J6 driver Parameter P0--P99999 |
| #700000--#799999 | J7 driver Parameter P0--P99999 |
| #800000--#899999 | J8 driver Parameter P0--P99999 |

(4) Special Variable for Robot controller:

Robot controller can save 1000 position point data at most, number: 0-999;

Robot controller can save 100 position translation data at most, number: 0-99;

A) #900000--#909998 corresponds to XYZABCXsYs coordinate of **Point** No.0--999, unit: mm or degree;

Units digit 1--8 corresponds XYZABCXsYs; unit is degree or mm

Thousand/Hundreds/Tens digit combination correspond to point No.0--999;

Sample: #903473 corresponds to Z coordinate value of Point No.347.

B) #910000--#919998 corresponds to J1J2J3J4J5J6J7J8 coordinate of **Point** No.0--999, unit: degree;

Units digit 1--8 corresponds J1J2J3J4J5J6J7J8; unit is degree

Thousand/Hundreds/Tens digit combination correspond to point No.0--999;

Sample: #917645 corresponds to J5 coordinate value of Point No.764.

C) #920000--#920998 corresponds to XYZABCXsYs value of **Translation** No.0--99, unit: mm or degree;

Units digit 1--8 corresponds XYZABCXsYs;

Hundreds/Tens digit combination correspond to point No.0--99;

Sample: #920682 corresponds to Y coordinate value of translation No.68.

(5) M400--M799.(M400--M719 is user-defined,M720--M799 better not to use,it's for controller backup auxiliary relay)

M720: 9th axis drive alarm

M721: 10th axis drive alarm

M722: 11th axis drive alarm

M723: 12th axis drive alarm

M724: 9th axis forbidden move

M725: 10th axis forbidden move

M726: 11th axis forbidden move

M727: 12th axis forbidden move

M728: 9th axis alarm for limit positive

M729: 10th axis alarm for limit positive

M730: 11th axis alarm for limit positive

M731: 12th axis alarm for limit positive

M732: 9th axis alarm for limit negative

M733: 10th axis alarm for limit negative

M734: 11th axis alarm for limit negative

M735: 12th axis alarm for limit negative

M736: Alarm for robot entering the wrong area

In IO “diagn” interface, could press F2 again, to check the IO point status-->auxiliary relay M400--M799 status-->IO oscilloscope