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(24) 2010 04 19

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(21) 10-2007-0137066
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(43) 2009 07 01
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JP05116053 A*
JP05116056 A*
KR100579083 B1*
KR1019880002387 B1*
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: 1 :

(73)
171

(72)
104-507
1 105-1201
( )

(74)

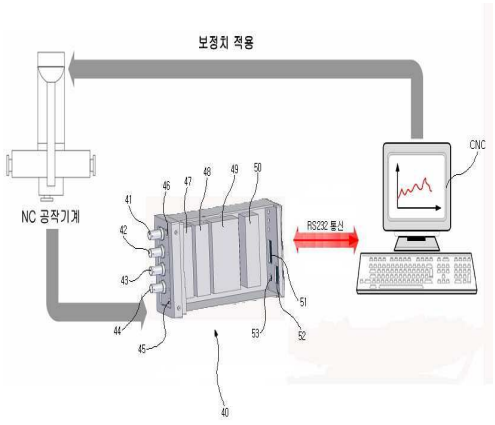
(54)

(57)

. (X, Y, Z) A/D A/D , A/D

; CNC RS232
. CNC .

- 4



(72)

1 105-710

111-401

NK137G

(NRL)

2003 07 01 ~ 2008 12 31

1

2

3

4

5

,

CNC;

(X, Y, Z) 3 ,
CNC ,

(X, Y, Z) A/D A/D
, A/D

; CNC
RS232 , LED ,

, LED
LED ,

.

6

7

8

[0001]

.

[0002] , X Y Z

.

70% .

[0003]

CNC(Computerized Numerical Controller) .

.

[0004] .

.

[0005] ,

. ,

.

[0006] .

PC

.

[0007] 1 .

[0008] 1 .

[0009] 1 , X , Y , Z

. , X , Y , Z ,

. X , Y , Z , A/D ,

X , Y , Z A/D . PC A/D

.

. ,

.

[0010] X , Y , Z ,

. 2 .

[0011] 2 , . 2 , X ,

Y , Z , .

3 .

[0012] 3 , . 3 , X

, Y , Z , . 3

16.5 .

[0013] NC ,

I/O CNC

. NC

.

.

[0014] 1 PC , +,

- (Offset) .

PC ,

.

[0015] ,

/

.

[0016]

CNC , (X, Y, Z)

A/D A/D , A/D

; CNC

RS232 .

[0017] , LED .

[0018] , LED

LED .

[0019] ,

.

[0020] , .

[0021] , ,

CNC; (X, Y, Z) 3

, CNC ,

(X, Y, Z) A/D A/D ,

A/D ;

CNC RS232 .

[0022] , LED .

[0023] , LED

LED .

[0024] ,

.

[0025] , .

[0026] , PC

3

.

[0027] , CNC .

[0028] ,

.

[0029] , 4 7 .

[0030] 4 .

[0031] 4 , (40) CNC . , (40) 3 , CNC . CNC CNC .

[0032] (40) , ( ) X , Y , Z , X (41), Y (42), Z (43), (44) . , LED(46) (41, 42, 43, 44) . , (45) (40) .

[0033] (40) , A/D (48) LED(46) LED (47) DSP(49) CNC RS232 (50) . DSP(49) . DSP(49) .

[0034] (40) CNC , CNC RS232 RS232 DSP(digital signal processor : 49) JTAG (51) (53) .

[0035] (40) 5 .

[0036] 5 .

[0037] 5 (40) (40) .

[0038] 5 , A/D (48) ( ) X , Y , Z , A/D (491) . , A/D (48) 16 , , RS232 CNC . A/D (48) ( ) 0 ~ 3.3V 0 ~ 100 . (491) LED (47) . LED (47) LED . (491) (492) . (492) . (492) CNC . (492) . , (492) CNC . (491) (491) RS232 (50) CNC . CNC CNC 6 .

[0039] 6 .

[0040] 6 , NC [: $P_UIFR(…)] (Link) [: /Channel/UserFrame/LinShift(…)] (VC++) HMI(Human Man Interface, CNC) OEM ( ) CNC . ,

CNC

. 7

.

[0041] 7 .

[0042] 7 , . 7 , X , Y , Z , . 7 3.9 3 16.5 . , 76.4% .

[0043] 1 ,

[0044] 2 ,

[0045] 3 ,

[0046] 4 ,

[0047] 5 ,

[0048] 6 ,

[0049] 7 .

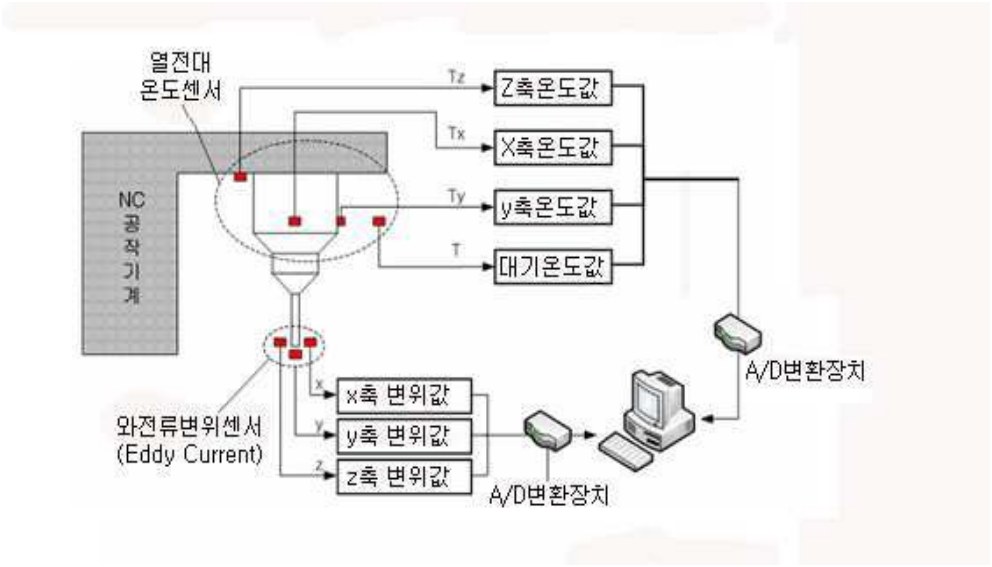
[0050] *

[0051] 40 : 45 :

[0052] 47 : LED 48 : A/D

[0053] 49 : DSP 50 : RS232

1



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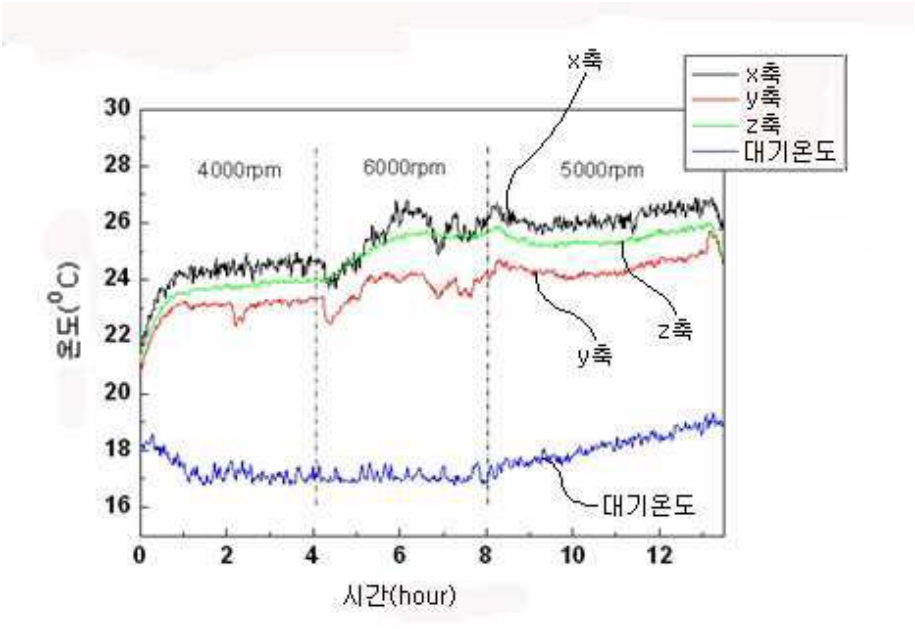
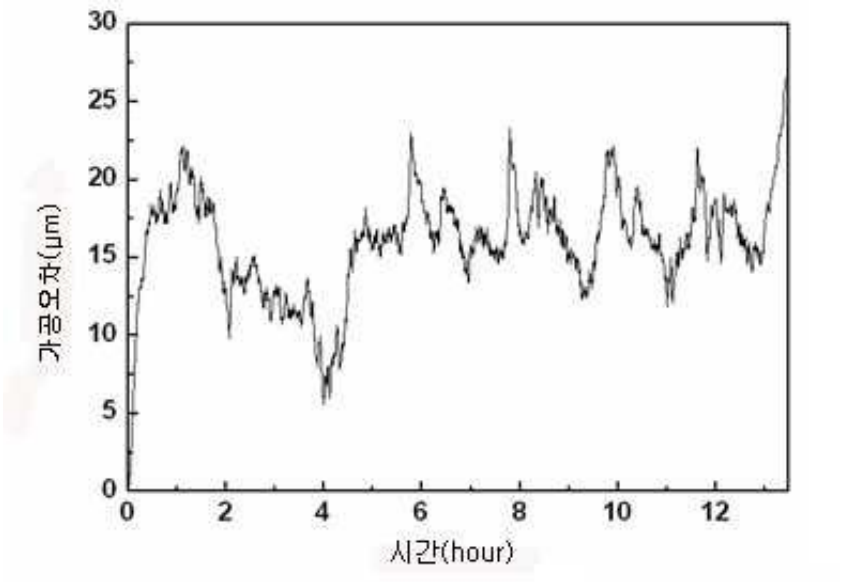
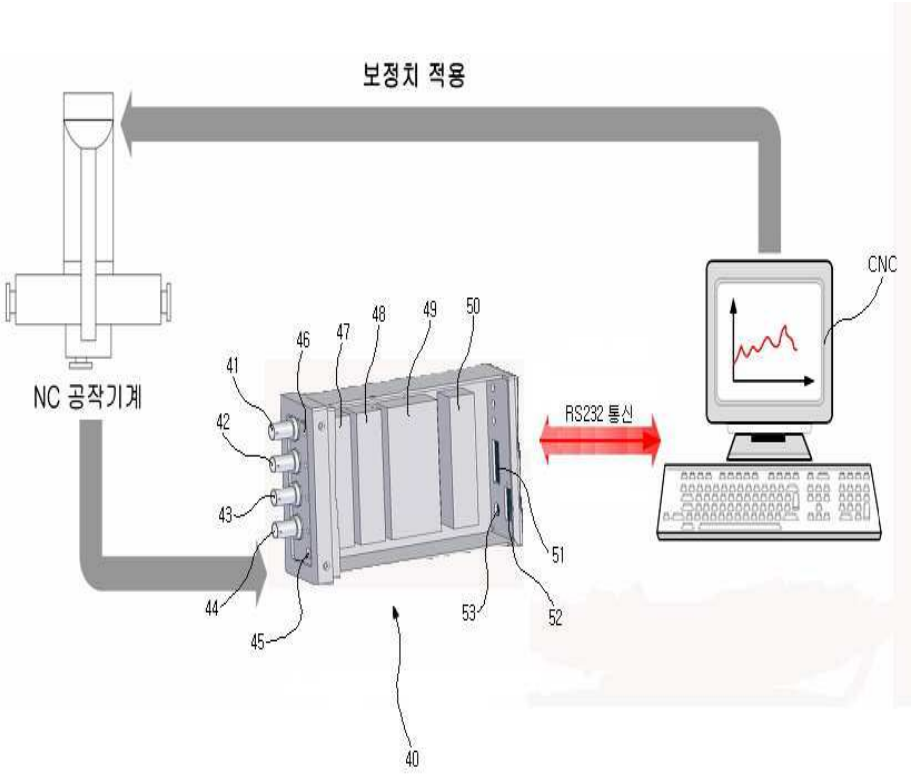

x축
y축
z축
대기온도
4000rpm
6000rpm
5000rpm
온도(°C)
시간(hour)

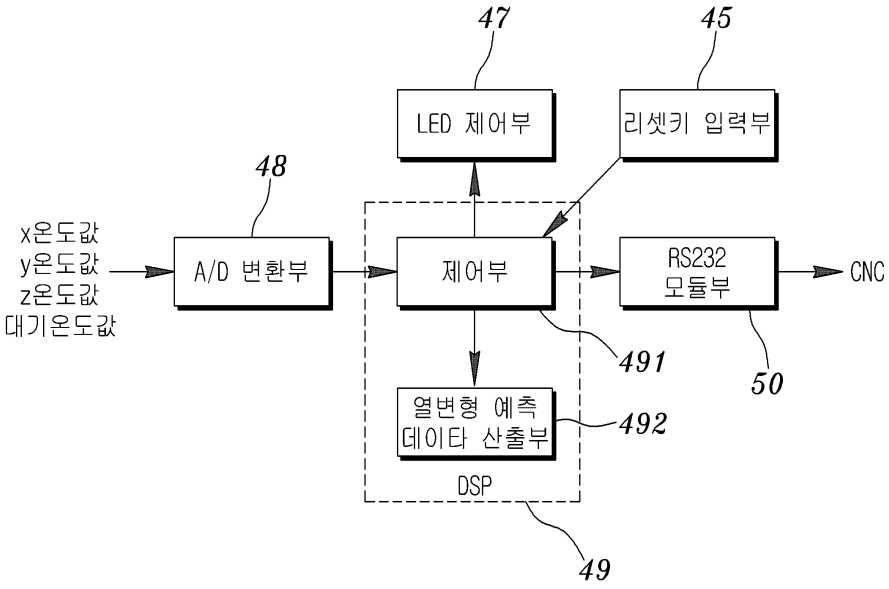
3


가공오차(μm)
시간(hour)

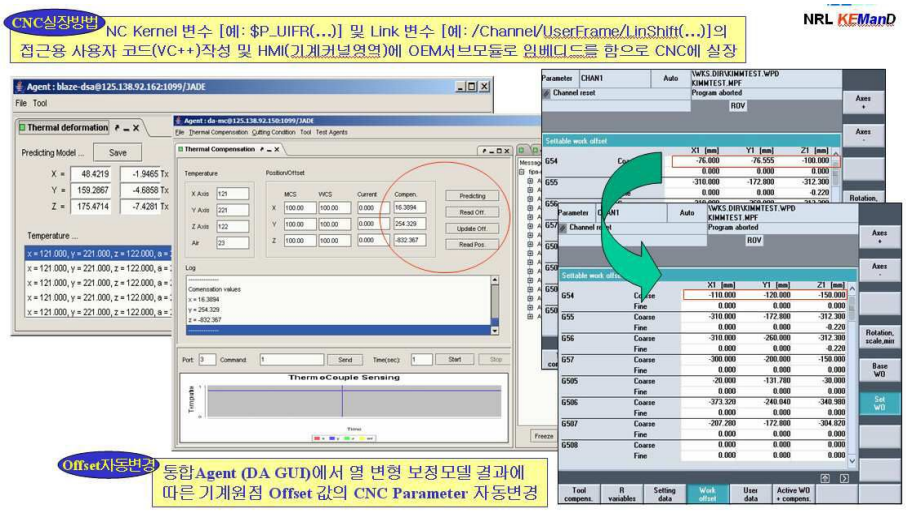
4


보정치 적용
NC 공작기계
CNC
RS232 통신
41
42
43
44
45
46
47
48
49
50
51
52
53
40

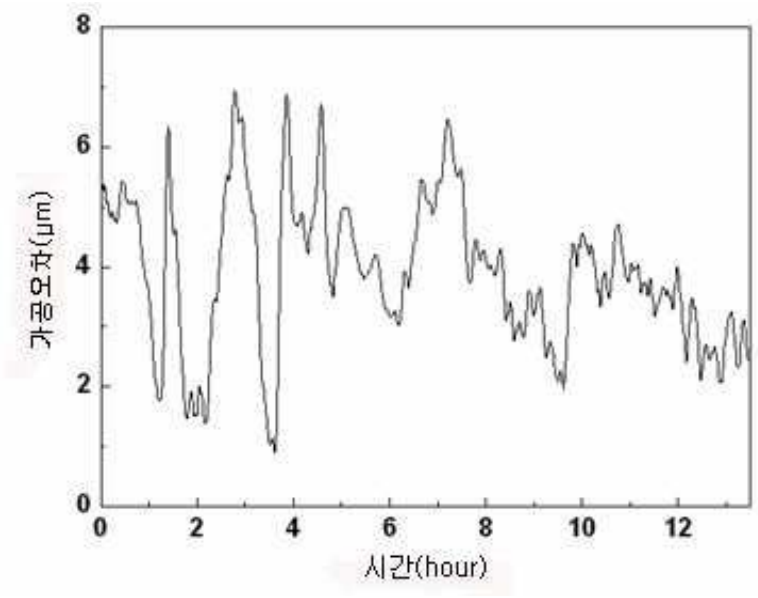
5


47
45
LED 제어부
리셋키 입력부
48
x온도값
y온도값
z온도값
대기온도값
A/D 변환부
제어부
RS232
모듈부
CNC
491
50
열변형 예측
데이타 산출부
492
DSP
49

6


CNC실장방법
NC Kernel 변수 [예: $P_UIFR(...)] 및 Link 변수 [예: /Channel/UserFrame/LinShift(...)]의 접근용 사용자 코드(VC++)작성 및 HMI(기계커널영역)에 OEM서브모듈로 임베디드를 함으로 CNC에 실장
NRL KEManD
Offset자동변경
통합Agent (DA GUI)에서 열 변형 보정모델 결과에 따른 기계원점 Offset 값의 CNC Parameter 자동변경

7


가공오차(μm)
시간(hour)
0
2
4
6
8
10
12