

```
'Antenna Rotator Controller II
'KG4JJH
'09/23/2007
'Revised 12/7/2010
'Added Left & Right pushbuttons
Const Device = CB220
Ramclear
Set Display 2,1,115200,128
Set Pad 0,1,5
Set I2c 6,7
Input 5
Const Byte KeyTable =
(0,0,1,2,3,11,0,0,0,0,4,5,6,12,0,0,0,0,7,8,9,13,0,0,0,0,16,0,15,14)
Opencom 0,38400,3,10,10
```

```
Dim A As String
Dim I As Integer
Dim T1 As Integer
Dim T2 As Integer
Dim T3 As Integer
Dim T1Flag As Integer
Dim T2Flag As Integer
Dim T3Flag As Integer
Dim Target As Integer
Dim Status As String
Dim X As Byte
Dim Azimuth As Integer
Dim Switch As Integer
Dim Control As String
Dim Reg1 As Byte
Dim Revision As Byte
Dim Magnetic As Integer
Dim Declination As Long
Dim DecAbs As Long
Dim True As Integer
Dim Az As String
Dim Azi As String
Dim Blink As Integer
Dim Current As Integer
Dim LeftPB As Integer
Dim RightPB As Integer
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```
Cls
Delay 200
Csroff
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Locate 2,0
Print "Antenna Rotator"
Locate 5,1
Print "Controller"
Locate 7,2
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Print "KG4JJH"
Locate 3,3
Print "Software V1.5"
Delay 3000
Cls
Delay 200
Csroff
Print
&H1B,&H44,8,0B00110,0B01001,0B01001,0B00110,0B00000,0B00000,0B00000,0B00
Locate 0,0
Print "Azimuth:      ",8
Locate 1,1
Print "Target:      ",8
Locate 1,2
Print "Status:"
Locate 0,3
Print "Control:"
Gosub Compass
Target=Azimuth
Locate 9,1
Print  Dp(Target,3,1),8
T1Flag=1
T2Flag=1
T3Flag=1

MainLoop:
  Gosub Compass
  Gosub Stall
  Gosub ReadSwitch
  Gosub ReadOutputs
  On Pad Gosub PadRead
  If Switch=1 Then On Recv0 Gosub PC
  Gosub StopRotate
  Gosub LeftPush
  Gosub RightPush
Goto MainLoop

ReadOutputs:
  If Outstat(8)=0 And Outstat(9)=0 Then Status="Idle      "
  If Outstat(8)=1 And Outstat(9)=0 Then Status="Turning CW "
  If Outstat(8)=0 And Outstat(9)=1 Then Status="Turning CCW"
  Locate 9,2
  Print Status
Return

ReadSwitch:
  Switch = Keyin(4,10)      'Input switch position at P4 and remove
switch bounce
  If Switch=0 Then Control="Keypad  "
  If Switch=1 Then Control="PC      "
  Locate 9,3

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Print Control
Return
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PadRead:
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  If Switch=1 Then Return           'Switched to PC
  X=Getpad(1)
  X=KeyTable(X)
  Select Case X
    Case Is < 10                     '0-9 is pressed
      If T1Flag=0 Then Goto GetT1    'get 1st digit
      If T2Flag=0 Then Goto GetT2    'get 2nd digit
      If T3Flag=0 Then Goto GetT3    'get 3rd digit
    Case 11                           'GO is pressed
      If Target>359 Then Gosub BlinkClearTarget
      If Target<360 Then Gosub StartRotate
    Case 12                           'STOP is pressed
      Gosub Stop
    Case 13                           'CLR is pressed
      Gosub ClearTarget
    Case 14                           'RST is pressed
      Gosub Reboot
    Case 15                           'Jog CCW is pressed
      Gosub JogCCW
    Case 16                           'Jog CW is pressed
      Gosub JogCW
  End Select
```

```
Return
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```
BlinkClearTarget:
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```
  For Blink=1 To 4
    Print 27,"b"
    Delay 100
    Print 27,"B"
    Delay 100
  Next
  T1=0
  T2=0
  T3=0
  T1Flag=0
  T2Flag=0
  T3Flag=0
  Locate 9,1
  Print "  ",8
  Delay 100
```

```
Return
```

```
ClearTarget:
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```
  T1=0
  T2=0
  T3=0
  T1Flag=0
```

```

    T2Flag=0
    T3Flag=0
    Locate 9,1
    Print "          "
    Locate 12,1
    Print 8
    Delay 100
Return

GetT1:

    T1=X
    Locate 9,1
    Print Dec T1
    T1Flag=1
    Target=((T1*100)+(T2*10)+T3)
Return

GetT2:

    T2=X
    Locate 10,1
    Print Dec T2
    T2Flag=1
    Target=((T1*100)+(T2*10)+T3)
Return

GetT3:

    T3=X
    Locate 11,1
    Print Dec T3
    T3Flag=1
    Target=((T1*100)+(T2*10)+T3)
Return

StartRotate:

    If (T1Flag+T2Flag+T3Flag) <> 3 Then Return
    If Azimuth < Target Then Out 8,1          'Turn CW
    If Azimuth > Target Then Out 9,1          'Turn CCW
Return

StopRotate:

    If Azimuth>Target-2 Then Out 8,0
    If Azimuth<Target+2 Then Out 9,0
Return

JogCW:

    If Azimuth>357 Then Return                'Rotor has mechanical
stop at 359 degrees
    If Outstat(8)=0 And Outstat(9)=0 Then Status="Jog CW      "
    Locate 9,2
    Print Status

```

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Pulsout 8,1800           ' ~2 Degrees CW
Status="Idle           "
Locate 9,2
Print Status
Return

JogCCW:
If Azimuth<3 Then Return           'Rotor has mechanical
stop at 0 degrees
If Outstat(8)=0 And Outstat(9)=0 Then Status="Jog CCW           "
Locate 9,2
Print Status
Pulsout 9,1800           ' ~2 Degrees CCW
Status="Idle           "
Locate 9,2
Print Status
Return

PC:
If Switch=0 Then Return           'Switched to Keypad
If Blen(0,0)>4 Then A=Getstr(0,10)
If Left(A,1)="M" Then
If Right(A,1)=Chr(&H0D) Then
If Len(A)=5 Then Goto Yaesu
Endif
Endif
If Left(A,1)="A" Then
If Mid(A,2,1)=Chr(&H0D) Then
If Right(A,1)=Chr(&H0D) Then
If Len(A)=6 Then Goto Orion
Endif
Endif
Endif

Yaesu:
Azi=Mid(A,2,3)
Target=Val(Azi)
Locate 9,1
Print Dp(Target,3,1),8
T1Flag=1
T2Flag=1
T3Flag=1
Goto StartRotate

Orion:
Azi=Mid(A,3,3)
Target=Val(Azi)
Locate 9,1
Print Dp(Target,3,1),8
T1Flag=1
T2Flag=1

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    T3Flag=1
    Goto StartRotate
Return

Stop:
    Out 8,0
    Out 9,0
Return

Compass:
    Print
    &H1B,&H44,8,0B00110,0B01001,0B01001,0B00110,0B00000,0B00000,0B00000,0B00000
    Delay 100 'Reduces flicker
    'Read CMPS03 register 0 (byte) into Revision
    I2cstart 'Send start bit
    I=I2cwrite(&hc0) 'Send module address with read/write bit low
(0xc0)
    I=I2cwrite(&h00) 'Send register to read (register 0)
    I2cstart 'Send start bit again
    I=I2cwrite(&hc1) 'Send module address again with read/write bit
high (0xc1)
    Revision = I2creadna(0) 'Revision = CMPS03 register 0
    'Read CMPS03 register 1 (Byte) into Reg1 As 0 To 255
    I2cstart 'Send start bit
    I=I2cwrite(&hc0) 'Send module address with read/write bit low
(0xc0)
    I=I2cwrite(&h01) 'Send register to read (register 1)
    I2cstart 'Send start bit again
    I=I2cwrite(&hc1) 'Send module address again with read/write bit
high (0xc1)
    Reg1 = I2creadna(0) 'Reg1 = CMPS03 register 1
    'Read CMPS03 register 2 (word) into Magnetic.Bytel, 3256 = 325.6
degrees
    I2cstart 'Send start bit
    I=I2cwrite(&hc0) 'Send module address with read/write bit low
(0xc0)
    I=I2cwrite(&h02) 'Send register to read (register 2)
    I2cstart 'Send start bit again
    I=I2cwrite(&hc1) 'Send module address again with read/write bit
high (0xc1)
    Magnetic.Bytel=I2creadna(0) 'Magnetic.Bytel = CMPS03 register 2
    'Read register 3 (word) into Magnetic.Lowbyte
    I2cstart 'Send start bit
    I=I2cwrite(&hc0) 'Send module address with read/write bit low
(0xc0)
    I=I2cwrite(&h03) 'Send register to read (register 3)
    I2cstart 'Send start bit again
    I=I2cwrite(&hc1) 'Send module address again with read/write bit
high (0xc1)
    Magnetic.Lowbyte=I2creadna(0) 'Magnetic.Lowbyte = CMPS03 register
3

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'The Declination for my QTH is 4.8 deg W. West Declination is negative & East Declination is positive, so 4.8W = -4.8 degrees.  
'Multiply this number X 10 to get it into the compass module format of 0 to 3599: -4.8 x 10 = -48  
'Replace "-48" in the next line with your Declination: 2.8E, 2.8\*10=28

Declination=28

DecAbs = Abs Declination 'Absolute value of Declination  
'Math for East & West Declinations to keep True calcs between 0 and 359.  
If Declination < 0 Then  
    If Magnetic < DecAbs Then True = Magnetic + Declination + 3600  
Else True = Magnetic + Declination  
Endif  
If Declination > 0 Then  
    If Magnetic > 3599 - Declination Then True = Magnetic + Declination - 3600  
Else True = Magnetic + Declination  
Endif  
Az=Dp(True/10,3,1)  
Azimuth=True/10  
Locate 9,0  
Print Az,8  
I2cstop  
Return

Stall: 'Check motor current at P5  
Current=Adin(5)  
Select Case Current  
    Case Is > 400  
        Status="Stalled"  
        Locate 9,2  
        Print Status  
        Out 8,0  
        Out 9,0  
        Delay 2000  
    End Select  
Return

Reboot:  
    Out 8,0  
    Out 9,0  
    Reset  
Return

LeftPush:  
LeftPB=Keyinh(12,10)  
Do Until LeftPB=0  
    LeftPB=Keyinh(12,10)

```
Out 9,1
Gosub Stall
If Outstat(8)=0 And Outstat(9)=1 Then Status="Turning CCW"
If Outstat(9)=1 Then Control="Left PB "
Locate 9,2
Print Status
Locate 9,3
Print Control
Gosub Compass
If LeftPB=0 Then Out 9,0
Loop
Return
```

```
RightPush:
RightPB=Keyinh(13,10)
Do Until RightPB=0
  RightPB=Keyinh(13,10)
  Out 8,1
  Gosub Stall
  If Outstat(8)=1 And Outstat(9)=0 Then Status="Turning CW "
  Locate 9,2
  Print Status
  If Outstat(8)=1 Then Control="Right PB"
  Locate 9,3
  Print Control
  Gosub Compass
  If RightPB=0 Then Out 8,0
Loop
Return
```