

```
// K3NG Quick Start
// Mini-Kits Changes are in Blue
//
// In order to test and calibrate your unit, connect the Serial Monitor to the COM port set for
9600 and carriage return
// All command letters must be uppercase.
// The backslash (\) command toggles debug mode which will periodically display key
parameters.
//
// To test basic operation, send commands using Serial Monitor:
// Rotate left(CCW): L
// Rotate right(CW): R
// Stop rotation: A or S commands
// Read the current azimuth: C
// Go to an azimuth automatically: M command (examples: M180 = go to 180 degrees, M010
= go to 10 degrees
//
// To calibrate the unit, send the O, ( Changed to G ) command and rotate to 180 degrees full
CCW and send a carriage return, then
// send the F command and rotate to 270 degrees full CW and send a carriage return
(assuming a 450 degrees rotation rotator). The reason we cannot use O is because the serial
link or USB when connecting from a computer to the Arduino when #define
FEATURE_YAESU_EMULATION is activated sends a random O and sets the Azimuth
offset for 180 degrees.
// If you are operating a 360 degree rotation rotator, for the F command rotate to 180 degrees
full CW, not 270. Set at 270 degrees for the G-5500
//
// To use this code with AZ/EL rotators, uncomment the
FEATURE_ELEVATION_CONTROL line below
//
// This code currently does not handle flipped rotator dials 12 o'clock = 180 degrees. (email
me if you would like this capability)
// It does properly handle the 450 degree rotation capability of the Yaesu rotators.
//
// This code has been successfully interfaced with non-Yaesu rotators. Email me if you have a
rotator you would like to interface this to.
//
```

// With the addition of a reasonable capacity DC power supply and two relays, this unit could entirely replace a control unit if desired.

// 9/12/11 W3SA JJE added code to correct elevation display which was not following A1 input (map function was not working using the variables)

// Added code to keep azimuth and elevation updated if changed from the rotor control unit.

// Added code to handle flipped azimuth of antenna when elevation passes 90 degrees.

// Changed LCD display to display Direction, Azimuth and Elevation of antenna(s) on first line of display and actual Rotor azimuth and elevation on the second line

// Then when the elevation has passed 90 degrees you would get:

// NNE A 15 E 75

// RTR A 195 E 115

// Otherwise it would be

// NNE A 15 E 75

// RTR A 15 E 75

//

B	- Report elevation
C	- Report azimuth
C2	- Report azimuth and elevation
S	- Stop all rotation
A	- Stop azimuth rotation
E	- Stop elevation rotation
L	- Rotate azimuth left (CCW)
R	- Rotate azimuth right (CW)
D	- Rotate elevation down
U	- Rotate elevation up
Mxxx	- Move to azimuth
Wxxx yyy	- Move to azimuth xxxx and elevation yyy
X1	- Change to azimuth rotation speed setting 1
X2	- Change to azimuth rotation speed setting 2
X3	- Change to azimuth rotation speed setting 3
X4	- Change to azimuth rotation speed setting 4
O (G)	- Azimuth offset calibration
F	- Azimuth full scale calibration
O2 (G2)	- Elevation offset calibration
F2	- Elevation full scale calibration
P36	- Switch to 360 degree mode
P45	- Switch to 450 degree mode
Z	- Toggle north / south centered mode
H	- Help

Backslash Commands

[Setup on the remote slave unit using the Mini-Kits calibration software version of K3NG](#)

Backslash commands are available by default and are available regardless of activation of Yaesu or Easycom commands.

```
\Ax[xxx] [.] [xxxx] - manually calibrate azimuth
\Ax[x] [x] - manually calibrate azimuth
(FEATURE_AZ_POSITION_ROTARY_ENCODER & FEATURE_AZ_POSITION_PULSE_INPUT)
\Bx[xxx] [.] [xxxx] - manually calibrate elevation
\Bx[x] [x] - manually calibrate elevation
(FEATURE_EL_POSITION_ROTARY_ENCODER & FEATURE_EL_POSITION_PULSE_INPUT)
\C - display clock
\D - activate debug logs
\E - initialize EEPROM
\Fxx - change I/O pin LOW, xx = pin number
\Gxxxxxx - set coordinates using grid square
\H - Clear and redraw the LCD display
\Ix[x] [x] - set az starting point (set to 180 degrees for G-5500)
\I - display the current az starting point
\Jx[x] [x] - set az rotation capability (Set to 450 degrees G-5500)
\J - display the current az rotation capability
\Kx - force disable the az brake even if a pin is defined
(x: 0 = enable, 1 = disable)
\K - display the current az brake state
\L - rotate to long path
\Mx - activate or deactivate moon tracking (x: 0 =
deactivate, 1 = activate)
\Nxx - change I/O pin HIGH, xx = pin number
\Oyyyyymmddhhmm - set clock (enter UTC time, not local time)
\P - park antenna
\Q - Save settings in the EEPROM and restart (Save)
\R - remote port receive sniff activate/deactivate
\S[string] - send text out remote port
\T - remote port transmit sniff activate/deactivate
\Ux - activate or deactivate sun tracking (x: 0 =
deactivate, 1 = activate)
\V[-]x[.] [x] [x] [x] - configure clock timezone offset in hours
\Wxyyyy - turn on pin PWM; xx = pin number, yyy = PWM value (0-
255)
\XM - calibrate azimuth and elevation to current moon
position
\XS - calibrate azimuth and elevation to current sun
position
\X0 - clear calibration to defaults
\Y - query AutoPark status
\Yx[x] [x] [x] - deactivate or activate AutoPark and set timer time
\Z - suspend automatic remote commands
\+ - azimuth LCD display mode switch: normal, raw degrees,
+overlap
```

Extended Commands

(Commands below are disabled if compiling with
OPTION_SAVE_MEMORY_EXCLUDE_EXTENDED_COMMANDS)

```
\?ARxx          - analog pin read; xx = pin #
\?AS            - query azimuth rotation status
\?AWxxxxxyyy   - analog pin write; xx = pin #, yyy = value to write (0
- 255)
\?AZ            - query azimuth
\?CL            - read clock
\?DLxx         - digital pin write low; xx = pin #
\?DHxx         - digital pin write high; xx = pin #
\?DIxx         - digital pin initialize as input; xx = pin #
\?DOxx         - digital pin initialize as output; xx = pin # (01, 02,
A0, etc.)
\?DPxx         - digital pin initialize as input with pullup; xx = pin
#
\?DRxx         - digital pin read; xx = pin #
\?DTxxxxxyyy   - digital pin tone output; xx = pin #, yyy = frequency
\?EL           - query elevation
\?ES           - query elevation rotation status
\?GAX[x] [x] [.x] [x] - go to AZ xxx.x
\?GEX[x] [x] [.x] [x] - go to EL
\?GS           - query GPS sync status
\?NTxx        - no tone; xx = pin #
\?PG           - ping remote
\?RD           - rotate down
\?RC           - read coordinates
\?RL           - rotate left
\?RR           - rotate right
\?RU           - rotate up
\?SA           - stop azimuth rotation
\?SE           - stop elevation rotation
\?SS           - stop all rotation
\?CV           - query code version
\!OKxx[]      - response to command sent: valid command
\!??xx[]      - response to command sent: error
```