If you wish, you can mount the **GS-232A** on top of your Rotator Controller using the two supplied hook-and-loop fastener strips. Just remove the backing from one side of each strip, and press into place on the bottom of the **GS-232A**. Then remove the backing from the other side, and press the **GS-232A** into place on the Controller.

After installation and calibration, the Control Interface can accept commands entered directly from the keyboard, or from a program written specifically to support it (not supplied by Yaesu). For brief summaries of the commands recognized by the Control Interface, press [**H**] → [↵] for a list of azimuth commands, or [**H2**] → [↵] for elevations commands. Keep in mind that all commands require that the **ENTER** key be pressed after the command letter (or "**OD**h" be sent by a control program), although we will not repeat this when discussing the commands. Also note that any command letter may be sent in either upper or lower case. The info screens shown on the next page will be returned by the Control Interface.

Most commands have two versions: one for azimuth, and one for elevation. Commands are not echoed by the Control Interface, but a carriage return character ("**OD**h") is returned after every command, and also a line feed character ("**OA**h") if the command invoked returned data. Invalid commands cause "**? >**" to be returned and the input buffer cleared. Note that all angles are in degrees, beginning with zero at the most counterclockwise azimuth (or horizontal elevation). Angles sent to the Control Interface must be 3 digits long (left-zero-padded), and angles returned will, in some cases, be 4 digits long with a leading "+**O**."

COMMAND LIST

In the following command descriptions, the elevation version of each command, where there is one, is shown in parentheses (but don't type the parentheses). Remember that elevation commands require the **G-5400B**, **G-5600B** or **G-5500** Az/EL Rotators, or the **GX-500** adapter and the **G-500** or **G-550** Elevation Rotator.

O (O2)

Offset calibration for internal AZ (EL) trimmer potentiometer: preset rotator manually fully counter-clockwise, send command, and adjust trimmer on Control Interface until returned values are equal. Turn off the **GS-232A**'s **POWER** switch to store settings.

H (H2)

Returns list of commands (see page 19).

F (F2)

Full Scale Calibration: preset rotator manually to full scale, send command, adjust **OUT VOL ADJ** trimmer on rear of controller (or **GX-500** elevation adapter) until the returned data is "+O180 or +O450" ("+O*nnn*+O180" for elevation). Turn off the **GS-232A**'s **POWER** switch to save new settings.

R (U)

Start turning the rotator to the right (up)

L (D)

Start turning the rotator to the left (down).

A (E)

Stop azimuth (elevation) rotation.

S

Stop: cancel current command before completion.

C (B)

Return current azimuth (elevation) angle in the form "+0nnn" degrees.

C2

Return azimuth and elevation ("+O*aaa*+O*eee*", where *aaa* = azimuth, *eee* = elevation).

X*n*

Select azimuth rotator turning speed, where *n* = l (slowest) to 4 (fastest). This command can be issued during rotation, and takes effect immediately. There is no equivalent for elevation.

M*aaa*

Turn to *aaa* degrees azimuth, where aaa is three digits between "**000**" and "**360** or **450**: vary according to controller type." Rotation starts.

M*sss aaa bbb ccc*

This command, together with the [**T**] command, provides automatic, timed tracking of moving objects or propagation by the Control Interface itself. This command stores the time value *sss* seconds to wait between stepping from azimuth aaa to *bbb*, and then to *ccc*, etc. (from "2" to as many as "3800" angles may be stored with one command).

Note that this command is completely different than the [**T**] command with only one parameter: when multiple parameters are present, the first one is interpreted by the Control Interface as the rotation interval sss, not an angle. Valid ranges are "**001**" to "**999**" for *sss*, and "**000**" to "**360** or **450**: vary according to controller type" for the angles. When this command is sent, the parameters are stored in the Control Interface's RAM, and the rotator turns to angle aaa and waits for a subsequent [**T**] command to begin the actual stepping. All numbers must be 3 digits, space-separated. Stored values remain in effect until another [**M**] command is issued (this may have no parameters, in which case the "**? >**" error prompt is returned, but memories are still cleared), or until the controller is turned off or by toggling the **GS-232A** off and on.

T

See the [**M**] (above) and the [**W**] (below) command. Start automatic stepping routine (both azimuth and eievation): turn rotator to next sequentially memorized azimuth (or az-el pair, for the [**W**] command), wait sss seconds, and turn to next angle (or pair), etc. This command works only if a long-form [**M**] or [**W**] has been issued since power-up or the last reset.

N

Return serial number of currently selected memorized point [*nnnn*], and total number of memorized points [*mmmm*], in the form +*nnnn*+*mmmm*. Must be proceeded by either a long-form [**M**] or [**W**], and a T command. Used only during stepping (see [**T**] command).

The meaning of a "point" in this command following an [**M**] command is only an azimuth angle, so in this case *nnnn* and *mmmm* can range up to "**3800**" (the limit of available RAM in the Control Interface). However, when elevation is involved, a "point" following a [**W**] command is represented by both an azimuth and an elevation angle, in which case nnnn and mmmm can range up to only "**1900**," since each "point" is a pair of angles.

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Elevation Control Commands

These commands are only for az-el operation. Note that an azimuth angle must always be supplied when changing elevation, and that a setting point consists of a pair of angles.

W *aaa   eee*

Turn to *aaa* degrees azimuth and *eee* degrees elevation, where *aaa* is three digits between "**000**" and "**360** or **450**: vary according to controller type," and *eee* is three digits between "**000**" and "**180**." Rotators respond immediately.

W *sss   aaa   eee   aaa   sss ...*

This command is similar to the [**M**] command: the first parameter is a time interval, and succeeding parameters are angles. With this command, however, angles are in azimuth-elevation pairs, each pair representing one antenna location. At most "**1900**" pairs can be sent and stored in the Control Interface. As with the other commands, the time interval range is limited to "**001**" to "**999**" (seconds), azimuth to "**000**" to "**360** or **450**: vary according to controller type," and elevation to "**000**" to "**180**."

When this command is sent, the rotators turn to the first *aaa* azimuth parameter and the first *eee* elevation parameter, and wait for a subsequent [**T**] command to begin the actual stepping (to the next azimuth-elevation pair). Stored values remain in effect until another [**W**] command is issued (this may have no parameters, in which case the "**? >**" error prompt is returned, but memories are still cleared), or until the controller is turned off or by toggling the **GS-232A** off and on.

COMMAND LIST

Returned by [H] Command:

---------- COMMAND LIST 1 ----------

R	Clockwise Rotation
L	Counter Clockwise Rotation
A	CW / CCW Rotation Stop
C	Antenna Direction Value
M	Antenna Direction Setting. MXXX
M	Time Interval Direction Setting.
	MTTT XXX XXX XXX ---
	(TTT = Step value)
	(XXX = Horizontal Angle)
T	Start Command in the time interval direction setting mode.
N	Total number of setting angles in "M" mode and traced number of all datas (setting angles)
X1	Rotation Speed 1 (Horizontal) Low
X2	Rotation Speed 2 (Horizontal) Middle 1
X3	Rotation Speed 3 (Horizontal) Middle 2
X4	Rotation Speed 4 (Horizontal) High
S	All Stop
O	Offset Calibration
F	Full Scale Calibration

Returned by [H2] Command:

---------- HELP COMMAND 2 ----------

U	UP Direction Rotation
D	DOWN Direction Rotation
E	UP / DOWN Direction Rotation Stop
C2	Antenna Direction Value
W	Antenna Direction Setting.
	WXXX YYY
W	Time Interval Direction Setting.
	WTTT XXX YYY XXX YYY ---
	(TTT = Step value)
	(XXX = Horizontal Angle)
	(YYY = Elevation Angle)
T	Start Command in the time interval direction setting mode.
N	Total number of setting angle in "W" mode and traced number of all datas (setting angles)
S	All Stop
O2	Offset Calibration
F2	Full Scale Calibration
B	Elevation Antenna Direction Value

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