4O3A Signature Rotator Genius TCP protocol, rev. 4

All data is in text, extended ASCII format. Fixed length and positions.

1.0 Command |h – read heading

Description: Main command for reading data. Reads current heading along with the whole configuration and all the flags.

Input data: <Header[2]>
Output data: <Header[2]> <Active[1]> <Panic[1]> <CurrentAzimuth1[3]> <LimitCW1[3]> <LimitCCW1[3]> <Configuration1[1]> <Moving1[1]> <Offset1[4]> <TargetAzimuth1[3]> <StartAzimuth1[3]> <Limit1[1]> <Name[12]> <CurrentAzimuth2[3]> <LimitCW2[3]> <LimitCCW2[3]> <Configuration2[1]> <Moving2[1]> <Offset2[4]> <TargetAzimuth2[3]> <StartAzimuth2[3]> <Limit2[1]> <Name[12]>

Argument description:

Header	'|h', fixed.
Active	To be ignored, not used anymore.
Panic	If everything is ok, returns 0x00. Error codes are not defined yet, to be ignored for now.
CurrentAzimuthx	Current azimuth poistion, formated as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces. If set as '999' it means the sensor is not connected.
LimitCWx	Current CW limit, formated as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces.
LimitCCWx	Current CCW limit, formated as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces.
Configurationx	Could be either: 'A', for an azimuth rotator or 'E', for elevation rotator.
Movingx	Indicates whether the rotator is currently moving: '0' for not moving, '1' for moving CW, '2' for moving CCW
Offsetx	Compensation for things such as magnetic declination. This number will be added to azimuth, always. Formatted as a 4 byte string. Value ranges from '-180' to '180'. May contain white spaces.
TargetAzimuthx	Targeted azimuth that the rotator is moving towards, formatted as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces. If not moving, will be set to '999'.
StartAzimuthx	Starting position before moving towards the CurrentTargetx. Used to calculate progress bars. Formatted as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces. If not moving towards TargetAzimuthx, will be set to '999'.
Limitx	If a rotator is outside limits, this will be set to '1'. Otherwise it is '0'.
Name	Name of the tower, 12 plain text characters.

Example sent packet: |h
Example returned packet: |h0[0x00]100005350A1009999990TOW1 999010060E0019999990

Explanation:
Rotator 1 is online, with a current azimuth of 100 degrees. CW limit is 005, CCW limit is 350. It is set as “Azimuth”, currently moving clockwise. Has no stop offset.TargetAzimuth and StartAzimuth are not set, so it is being manually moved by a CW button. It is not outside limits. It is named “TOW1”.

Rotator 2 is offline, since the current azimuth is 999. CW limit is 010, CCW limit is 060. It is set as “Elevation”, currently not moving. Has a stop offset of 01. TargetAzimuth and StartAzimuth are not set. It is not outside limits. It is not named.

1.1 Command |c – set configuration

Description: Set configuration for a single rotator.

Input data: <Header[2]> <RotatorNumber[1]> <LimitCW[3]> <LimitCCW[3]> <Configuration[1]> <Offset[2]> <Name[10]>
Output data: <Header[2]> <Status[1]>

Argument description:

Header	'|c', fixed.
RotatorNumber	Number of the rotator that is to be configured. Formated as one byte character. Can be either '1' or '2'.
LimitCW	CW limit, formated as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces.
LimitCCW	CCW limit, formated as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces.
Configuration	Can be: 'A', for an azimuth rotator, or 'E', for an elevation rotator. All other bits must not be set.
Offset	In case of big towers, the tower might slip a few degrees past the desired target azimuth due to inertion. Setting offset will cause the controller to stop before, compensating for the inertion. Formatted as a 2 byte string. Value ranges from '0' to '10'. May contain white spaces.
Status	If successful returns 'K' (as 'ok'). If not, returns 'F' (as 'failed').
Name	Name of tower, 10 characters maximum. Must be padded with whitespaces until the end if less.

Example sent packet: |c1030300A00
Example returned packet: |cK

Explanation:
Configure rotator number 1. Set CW limit to 030. Set CCW limit to 300. Set it az 'Azimuth'. Don't set offset (00).
'K' returned as status, meaning the configuration is valid and accepted.

1.2 Command |A – move to target azimuth

Description: Move current azimuth to the target azimuth.

Input data: <Header[2]> <RotatorNumber[1]> <TargetAzimuth[3]>
Output data: <Header[2]> <TargetAzimuth[3]> <Status[1]>

Argument description:

Header	'|A', fixed.
RotatorNumber	Number of the rotator that is to be moved. Formated as one byte character. Can be either '1' or '2'.
TargetAzimuth	Targeted azimuth that the rotator is moving towards, formatted as a 3 byte string. Value ranges from '0' to '360'. May contain white spaces.
Status	If successful returns 'K' (as 'ok'). If not, returns 'F' (as 'failed').

Example sent packet: |A2158
Example returend packet: |AF

Explanation:
Go to azimuth 158 on rotator number 2.
'F' returned indicates this is not accepted, and the operation failed.

1.3 Command |P – rotate CW

Description: Move a rotator clockwise.

Input data: <Header[2]> <RotatorNumber[1]>
Output data: <Header[2]> <Status[1]>

Argument description:

Header	'|P', fixed.
RotatorNumber	Number of rotator to be moved. Formatted a a single byte. Must be either '1' or '2'
Status	If successful returns 'K' (as 'ok'). If not, returns 'F' (as 'failed').

In case the rotator is inside its limits, 'targetAzimuth' will be set to CW limit, in order to stop upon hitting it.
In case it is not, it will still be accepted, but must be stopped manually, and no target will be set.

Example sent packet: |P1
Example returned packet: |PK

Explanation:
Move rotator number 1 clockwise.
'K' returned indicates command is accepted, flags will be set accordingly.

1.4 Command |M – rotate CCW

Description: Move a rotator counterclockwise.

Input data: <Header[2]> <RotatorNumber[1]>
Output data: <Header[2]> <Status[1]>

Output data description:

Header	'|M', fixed.
RotatorNumber	Number of rotator to be moved. Formatted a a single byte. Must be either '1' or '2'.
Status	If successful returns 'K' (as 'ok'). If not, returns 'F' (as 'failed').

In case the rotator is inside its limits, 'targetAzimuth' will be set to CCW limit, in order to stop upon hitting it.
In case it is not, it will still be accepted, but must be stopped manually, and no target will be set.

Example sent packet: |M2
Example returned packet: |MF

Explanation:
Move rotator number 2 counter clockwise.
'F; returned indicates command is not accepted.

1.5 Command |S – stop rotating

Description: Stop all movement.

Input arguments: <Header[2]>
Output data: <Header[2]> <Status[1]>

Argument description:

Header	'|S', fixed.
Status	If successful returns 'K' (as 'ok'). If not, returns 'F' (as 'failed').

Example sent packet: |S
Example returned packet: |SK

Explanation:
Stop all rotators. 'K' indicates the command is accepted.