PCTRAK
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The PCTRAK utility developed on pc, communicates with the SSC(Station Servo Computer) on RS-232 or RS-422 interface(PC Port COM1). It has the features of getting current angles and digital data(state of the antenna), user interface for issuing operational commands to SSC, selecting a particular source for observations and tracking the selected source.

LINK LAYER INTERFACE

The link layer protocol is same as the communication protocol between ABC(Antenna Base Computer) and SSC. After the hardware

initialisations, PCTRAK starts communicating with SSC by sending display commands(30h and 34h). SSC sends ack for these commands, followed by the corrosponding responses. The link layer summary is displayed on the user screen.

Significance of the link layer summary display

1. SSC Cmds : Total No. of commands sent to SSC.
2. Tmouts : Total No. of Receive Timeouts detected by PCTRAK.
3. resp-30 : Total No. of SSC responses to "Read Angles" command.
4. resp-34 : Total No. of SSC responses to "Read Digital Variables" command.
5. Snaks : Total no. of NAKs sent to SSC.
6. Senqs : Total No. of enquiries sent to SSC.
7. Gnaks : Total No. of NAKs recived from SSC.
8. Genqs : Total No. of enquiries received from SSC.
9. Op Cmds : Total No. of operational commands sent to SSC.(Set SSC time command is also treated as the operational command).
10. Code : Command code(in Hex) of the most recently delivered Operational command .

DISPLAY FORMAT

1. Local Time, LST (Local Sidereal Time), HA(Hour Angle) and RA are shown in hh:mm:ss form
   where h = hour m = minute s = second

2. Source Azimuth and Elevation(Astronomical Cooordinates), Target Azimuth and Elevation(Antenna Coordinates) and SSC angles are shown in +/- ddd:mm:ss form
   where h = hour m = minute s = second

GENARAL DISPLAY DETAILS

User screen displays following information.

1. Local Time, LST and SSC time is displayed.

2. Source Coordinates viz. source name, RA and DEC are displayed.

3. User specified Azimuth Offset and Elevation Offset is displayed.

4. HA, Astronomical Coordinates, Antenna Coordinates and SSC current Azimuth and Elevation is displayed.

5. SSC Response to the Operational is displayed. In case of the failure of the Operational command, the reason of the failure is displayed.

COMMAND INTERFACE

Command interface is provided to issue various commands to PCTRAK. After typing the command when ENTER key is hit, the entered command will be decoded by PCTRAK. If unknown command(i.e wrongly typed or nonexistant command) is typed, PCTRAK responds with the display of "Unknown Command Entered"

List of Commands along with the Input Format :

1. exit : To quit from PCTRAK.

2. sour sourcename : To select the source for tracking. The source courdinates are read from the file PCTRAK.DAT. If the entered source is not present in the file , PCTRAK responds saying "Source Not found". Few sources with their coordinates are present in the file PCTRAK.DAT. New sources can be added by editing this file. For the known source, sourcename and its coordinates are displayed.

3. trak : Starts tracking the selected source. There are 2 time parameters for tracking, which are defined in the header file.

   1. Time ahead value : The difference(in seconds) between current time and the future time at which SSC should issue track command. Deafult : 10 sec.
   2. Track Command Interval : Time interval (in seconds) between 2 consecutive track commands. Default : 30 sec.

   Track command is implemented as Track on both axis only. Before issuing track command, source elevation is checked against the software low(20d) and high limits. If its beyond the limits, track command wont be issued and the corrosponding message is displayed.

4. posn : issues the move command for both axis.(moves to the

target position)

Before issuing position command, source elevation is checked against the software low(20d) and high limits. If its beyond the limits, posn command wont be issued and the corrosponding message is displayed.

5. amvaz angle : Antenna move in Azimuth axis.
    The input format for the angle entered is +/-ddd:mm:ss
        where d = deg m = minute s = second

6. mvel angle : Antenna move in Elevation axis.
    The input format for the angle entered is +/-ddd:mm:ss
        where d = deg m = minute s = second

    Before issuing move command, elevation is checked against the software low(20d) and high limits(90d). If its beyond the limits, move command wont be issued and the corrosponding message is displayed.

7. stop : stop command (on both axis) is issued. If PCTRAK is in track mode, track mode is reset.

8. hold : issues hold(on both axis) command. If PCTRAK is in track mode track mode is reset.

9. az_ofset angle : Introduces signed offset in the target azimuth. Offset value is reset to 0 when a new source is selected. By default offset is 0. The input format for the ofset angle entered is +/-ddd:mm:ss

10. el_ofset angle : Introduces signed offset in the target elevation. Offset value is reset to 0 when a new source is selected. By default offset is 0. The input format for the ofset angle entered is +/-ddd:mm:ss

MODULES USED

1. Library LIBVLBA.LIB

2. Program Specific Header Files : Mathcnst.h, Iaucnst.h, Aservpc.h, Ring.h.

3. Source Programs :
    1. APPLN.C : Application Layer Program.
    2. LINK.C : Link Layer Program.
    3. UTIL.C : Utilities Developed.

4. Project File : PCTRAK.PRJ

5. Executable File : PCTRAK.EXE.

6. Source Data File : PCTRAK.DAT

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                              PCTRAK.DAT


0 khodad        -74d03' 19d06' -5.5
0 greenwich      0d             0d              0.0
0 gmt            0d             0d             -5.5
1 CRAB          05h34m8.95s  +21d59'44.4"
1 CYGA          19h59m16.43s +40d43'16.3"
1 CASA          23h23m10.49s +58d47'30.6"
1 SAGA          17h45m17.80s -28d56'2.0"
1 VRGA          12h30m31.69s +12d25'24.7"

2 Note : Co-ordinates precessed on 12:1:94
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