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CCU Google Earth Agent User Manual

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1. General

CCUManager program, installed on CCU, is used as Google Earth Agent. The data for Google Earth contain SBC time-latitude-longitude points. Each point includes satellite longitude and iDirect series 5100 satellite modem SNR and Lock status.

2. CCU Side

2.1 Installation

CCUManagerCE.exe must be placed in "Storage Card/CCUManager" folder. To provide the program automatic start on reboot, its shortcut must be placed in "StartUp" folder, along with other automatically launched programs shortcuts. Following, after 4.53, software versions of CCU are supposed to place the program in list of automatically launched ones, by default, when "StartUp" folder is empty.

2.2 Top View

CCUManager program starts automatically on CCU reboot. CCUManager exists in CCU Screen as icon in notification area. Right mouse click on the icon brings up pop-up menu. Its "KML Log" submenu enables to open "KML Log Configuration", "KML Log Status" dialogs or to clear the log data. "About" command displays the program version.



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2.3 Data Recording

CCU reads periodically from SBC time, coordinates and satellite longitude, from satellite modem SNR and Lock status. These parameters snapshot is kept as separate point in CCU Memory.

SBC time and coordinate are values from GPS only. If there are not data from GPS, a new point isn't recorded.

CCU keeps up to 10000 last points in RAM. When number of accumulated pointed is maximal, new added points replaces oldest one.

The information is saved periodically and in case of its change in CCU flash card.

The information is saved in binary (not KML) format.

The data read minimum interval is 1minute.

The data saving interval is 4 hours.

New point is added only in case of some data change. It may be the ship coordinates, or satellite longitude, or modem status.

Minimum ship latitude, or ship longitude, or satellite longitude change for new point addition is 0.1 deg. Minimum SNR change is 1.0dB.

If these parameters didn't change but recording interval passed, only current GPS time is written as the last point final time.



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2.4 Configuration Dialog

The dialog contains following controls:

"Enable" check box,
"Ship Name",
"Recording Interval",
"ACU Address";
Satellite Modem group with
"Enable Modem Log",
"Modem Address",
"Telnet User Name",
"Telnet Password".

"Enable" check box enables or disables data recording and communication with Google Earth on remote PC.

"Ship Name" is default name, which identifies route in Google Earth.

"Recording Interval" value is in minutes.

"ACU Address" contains ACU IP address and, optionally, port number after ":".

Unchecked "Enable Modem Log" prevents all Modem data recording.

"Modem Address" contains the modem IP address and, optionally, port number after ":".

2.5 KML Status Window

The window displays current time and coordinates from GPS, satellite longitude, Modem's SNR and Lock status.

The window shows number of all points in the log and their time interval.

"Config" button duplicates the application menu command and opens "KML Log Configuration" dialog.



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3. PC Side

3.1 Data Appearance

The data from CCU is displayed in Google Earth as Network Link. To add a new one, select menu command “Add”, “Network Link”. In opened dialog, fields “Name” and “Link” should be assigned.

“Name” defines names of the data tree in “Places” pane. It may be, for example, name of the ship or IP Address.

“Link” is HTTP address of CCU. It may contain optional parts to point a part of the accumulated information to show. HTTP address structure is explained below in div. 3.2.

Google Earth displays the data in Places and 3D Viewer panes.

Places pane shows the data tree. 3D View shows the route.

Top node has label “Data for” plus Ship Name. Default Ship Name is defined on CCU side in CCUManagerCE program configuration dialog. It may be altered in HTTP address.

Double click on “Data” node shows the whole route in 3D Viewer.

Single click on “Data” brings up balloon window with general data description.

This description has following parts:

“Data request” according HTTP address (see div. 3.2);

number of received points for this data link; number of point marks in the response (see below);

distance between data marks, if it was specified in HTTP address;

number of points saved in CCU (10000 is maximum);

time interval of points saved in CCU;

program version of Google Earth agent program (CCUManager), if it was requested in HTTP address.

First strings of general description are shown in grey font in Places pane.

“Data” folder has 2 subfolders: “Path” and “Marks”.

If “Path” folder is unchecked, the line connecting data points in 3D Viewer isn’t shown. Path subfolder shows division of route in segments where SBC satellite selection (Satellite Longitude) doesn’t change. Different segment color in 3D Viewer reflects different Satellite Longitude. Maximum number of colors is 4. Segments with the same Satellite Longitude have the same color.

Double click on a segment in Places pane to show it completely in 3D Viewer.



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Each point in the response is longitude and latitude values pair. All points form the ship route in 3D Viewer. Some of the points are defined also as marks with some additive to coordinates parameters values. These points are included in "Marks" subfolder. Each mark is a tree node. Its name is the point date in time, like "5.09 11:30". Single left mouse click on a mark point in 3D Viewer brings up balloon with text information: Satellite Longitude, Modem SNR, Lock Status values and last the point date, time. Double click on a point zooms its area in 3D Viewer. Last recorded point in CCU log has icon in form of ship. Ship Name is added to this point description.



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3.2 Data Request

HTTP address has format

`http://<CCU_IP_Address>/CCU/KML/<Data Specifications>`

Case of letters, upper or lower, in the address is not significant.

In following examples CCU IP address is 62.0.50.123.

<Data Specifications> is optional part of HTTP address.

Default address without <Data Specifications> is the request for up to 10000 last recorded points.

Example: "http://62.0.50.123/ccu/kml".

The data specification sequence is not significant.

When the address is entered in Internet Explorer or another Browser, it asks to select file where to save the data. The default file name that Browser proposes is the last part of the HTTP address.

The HTTP address can contain any file name as its last part for this case.

Example: <http://62.0.50.123/ccu/kml/RouteInfo.kmz>. In this case Internet Explorer propose "RouteInfo.kmz" as file name.

Data from CCU is transferred in KMZ format, which is zip archive of a file in KML format. Double click on KMZ file in File Explorer opens it in Google Earth.

3.2.1 Data Specifications

"Version" is request to show the program version in the data general description

Example: <http://62.0.50.123/ccu/kml/version>.

"Name"/<ShipName> alters default Ship Name, which is shown in data description.

Default Ship Name is specified in CCU.

Example: <http://62.0.50.123/ccu/kml/name/Sea Star>

"RCI"/<N0>-<N1> defines requested interval of points - from point with order number <N0> to (including) point with order number <N1>. The interval borders sequence isn't significant: <N0>-<N1> and <N1>-<N0> specify the same interval.



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The points are ordered from last recorded to the oldest one. Most recently recorded point has order number 0; previous point has number 1, and so on, up to 9999.

Example: <http://62.0.50.123/ccu/rci/100-150> - to show points from 100 to 150.

Default interval (when "RCI" specification isn't included in the address) is 0-9999.

Following specifications define what points in the response must be marks.

A route point will be shown as mark in the case of, at least, one of following conditions:

- First and last point in the response
- Distance from previous mark is more then default or specified value
- Satellite Longitude changed, if there isn't specification in HTTP address to ignore it
- Modem Lock status changed, if there isn't specification in HTTP address to ignore it
- Modem SNR parameter change is more than default or specified value

"DIST"/<Num> construct defines minimum coordinates distance, in degrees, between marks. It may be difference in latitude or longitude.

Example: <http://62.0.50.123/ccu/kml/dist/0.5> - to add marks with minimum interval 0.5 deg between them.

The default distance is 1 deg.

"I_SL" specification means to ignore Satellite Longitude change as condition for new mark.

Example: http://62.0.50.123/ccu/kml/i_sl

"I_ML" specification means to ignore Modem Lock change as condition for new mark.

Example: http://62.0.50.123/ccu/kml/i_ml

"SNR"/<Value> specification defines minimum Modem SNR change.

Example: <http://62.0.50.123/ccu/kml/snr/1.5> - to add new mark when SNR change from previous mark is 1.5 or more.

The default value is 2.