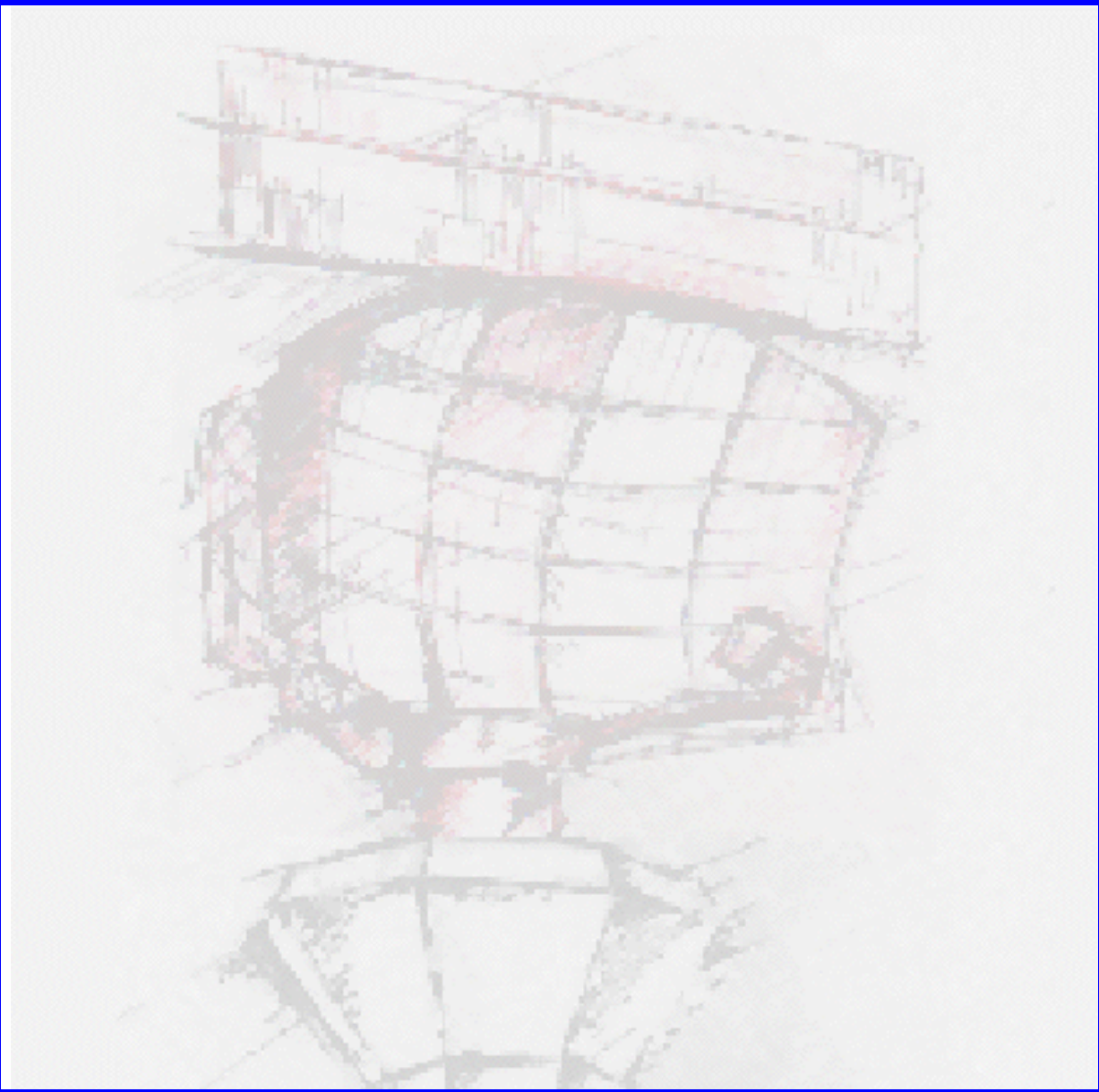


Primary Surveillance Radar Extractor



Control And Monitor –CAM– User Manual

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AUTHORITY	NAME AND SIGNATURE	DATE
Author	Bert Sauviller	19/04/07
Editor	Tom De Wit	18/01/07
Director ATC	Ing. M. Vanuytven	
Director Software Department	Ir. E. Moons	

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ACRONYMS

PSR	primary radar extractor
SSR	secondary radar extractor
PRE	primary radar extractor
PCT	PSR Controlled Timing Unit
MRD	Multi Radar Display (refer to the manual of the MRD)
DHM	Data Handler Module (refer to the manual of the DHM)
HDMI	High Definition Multimedia Interface
CAM	Control And Monitoring
COTS	Commercial Of-The-Shelf
ATC	Air Traffic Control
ACPR	Azimuth Change Pulse Rate
ARP	Azimuth Reset Pulse
STC	Sensitivity Time Control
PRF	Pulse Repetition Frequency

CONVENTIONS USED IN THIS MANUAL

The following conventions are used in this manual:



Note: This icon to the left of bold italicized text denotes a note, which alerts you to important information.



Caution: This icon to the left of bold italicized text denotes a caution, which alerts you to the possibility of data loss or a system crash.



Warning: This icon to the left of bold italicized text denotes a warning, which alerts you to the possibility of damage to you or your equipment

1. Introduction

The Primary Radar Extractor or PRE790 is developed to extend the life span of airport approach primary radar systems and to improve their performance. Although originally developed for the Thomson TA10M, the system can easily be adapted for usage on other radars (e.g Watchman AR51). The main step in the radar upgrade is the replacement of the full receiver processing unit, resulting in an immediate improvement by use of state of the art radar processing techniques; for example:

- Synchronous sampling of analog signal providing I and Q digital signals
- Full Doppler processing instead of MTI processing
- 16 bin FFT processing with Adaptive Clutter map for each of the 16 bins
- Constant false alarm rate filter (CFAR)
- Improved Pd



Figure 1-1: PRE790

The PRE790 has two main units: a video processing unit and a data processing unit.

The video processing unit samples the analog I/Q video (ADC). This digitized video signal is fed to an internal digital signal processor for further preprocessing and data reduction (filtering). The video data is aligned with the timing signals (ACP, ARP and trigger) and UTC time stamps are added by means of Intersoft Electronics' GPS450.

The data processing unit contains 4 serial ports for input and/or output. It can receive SSR targets from the existing co-located SSR extractor on its serial input lines. The video and data processing units are connected over a separate USB-interface to a dedicated processing pc.

Additional to the PRE790, a Programmable Controlled Timing Unit is installed (PCT791). This unit typically converts the timing signal outputs of the radar into PRE790 acceptable levels. Because the timing signals of the radar are manufacturer dependent, this interface unit needs to be designed specifically for every radar type.



Figure 1-2: PCT791

The PRE790 is completely controlled by the following software modules (installed on the processing pc):

- Extractor function: Doppler processing and plot extraction on the digitized video data.
- Combiner/Tracker function: combining the extracted PSR plots with the SSR target data and making tracks.
- RASS-R Data Handler Module software (DHM): possibility to output the different data on LAN or on serial lines using the data processing unit in the PRE790. Also, the DHM can send the video data over LAN to ATC centers or other clients.

The processing pc might be a 19inch rack pc, with no screen nor keyboard attached. It can be accessed using Windows Remote Desktop from the management console. Starting up/shutting down can be done using the webapplication to the DRAC interface.



Figure 1-3: Processing pc

Management console:

The Control And Monitoring (CAM) software, serves as Human Machine Interface and controls the PRE790. The software runs on a remote monitoring pc that acts as management console. As an asset, Intersoft Electronics' Multi Radar Display 3 or Technical Maintenance Display 3 can be installed on the management console, displaying the plot and video data in PPI style.

This manual explains the use of the Control And Monitoring software, or 'PSR Extractor CAM'. For detailed explanation about the extractor and the complete software and hardware design, we refer to the technical manual "IE-PSR-Extractor-TM-vxx.pdf".





Other names used for the management console are: management pc/station, monitor pc/station.

2. RASS-R toolbox



The PSR Extractor setup makes use of the Data Handler Module software and the Multi Radar Display, which are both part of the RASS-R toolbox.

The RASS-R toolbox is installed on your pc and has a shortcut on the desktop. It can also be accessed using the Windows Start-menu. The toolbox is displayed in Figure 2-1: RASS-R toolbox. The current version of the RASS-R toolbox is displayed in the right upper corner. The DHM and MRD3 are part of this RASS-R toolbox and can be opened using the appropriate icons  and . On the other hand, also the PSR Extractor CAM has direct shortcuts to these softwares.

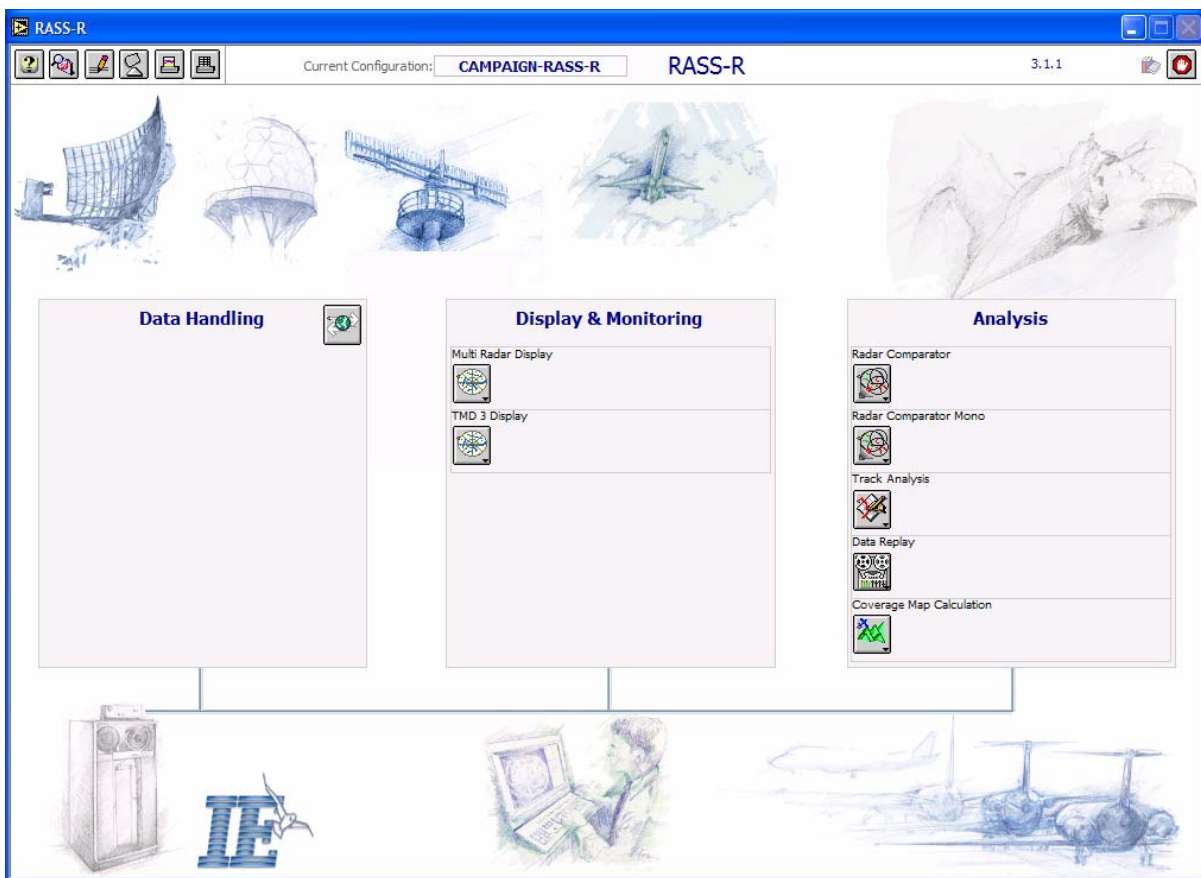










Figure 2-1: RASS-R toolbox

The menu bar contains the following items:

Table 2-1: RASS-R menu bar

Button	Usage
 Help window	When this button is clicked, the Help window will appear and show help information whenever you point over a button.
 Campaign change	Click this to make an appropriate campaign structure (see further)
 Change settings	Under development
 Site file	Under development
 Print graphs	Under development
 Print tables	Under development
 Exit	Quit the application

When you click the  button, it will ask you where you want to create your RASS-R campaign folder. Select the correct path. Upon completion, you should have the following directory structure created as in Figure 2-2: Campaign directory structure.

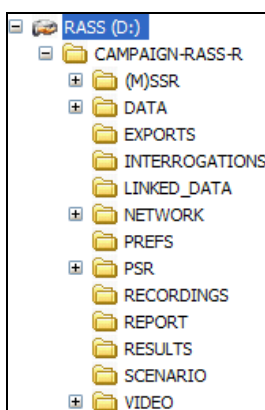


Figure 2-2: Campaign directory structure



When you make a campaign folder with the RASS-R toolbox, it is preferred to make it on a separate drive than the drive where your operation system is on. For example, as in the figure above, a structure named “CAMPAIGN-RASS-R” is created on the D-drive.

3. Different modules

This chapter gives an overview of the hardware and software (in block diagram and user interfaces). It will help the reader to better understand the 'Control And Monitor' software which is explained in the next chapter.

3.1 Hardware/software overview

A standard configuration, running different software components, is presented in the figure below. We can see the following parts:

- **PRE790:** installed in a (existing) 19" rack connected with the GPS450, the PCT791 and the processing pc. The PRE790 inputs the I/Q signals from the PSR.
- **PSR Controlled Timing Unit:** interface for timing signals between the radar and PRE790. It is connected via an HDMI¹-cable. The PCT791 is radar specific!
- **Processing pc:** the pc is connected to the PRE790. It is equipped with sufficient processing power (CPU), RAM (e.g. 4GB) and recording facilities (1TB harddisk, RAID configuration), DRAC-interface to perform the following tasks:
 - **Extractor server:** Extraction of the video data
 - **Tracker/combiner-server:** tracking and combining plots
 - **Data Handler Module:** to convert the data in any format (Asterix, Aircat, EV760 etc.), to make recordings and to stream the data over the network (LAN, serial port etc.)
- **Monitoring pc:** the monitoring pc is a desktop, installed in the radar shelter itself. It is used to monitor the processing pc. It fulfils the following tasks:
 - **Extractor CAM:** user interface to configure the extractor server and the tracker/combiner server on the processing pc.
 - **DHM Configuration manager:** user interface to configure the different DHM sessions running on the processing server.
 - **MRD3:** visualizes the SSR targets, PSR targets, combined targets, tracks and video.
 - The monitoring pc can also be used to access the processing pc using Windows Remote Desktop. If the processing pc is equipped with a DRAC-interface, its functionalities can be accessed by typing in the processing pc's DRAC IP-address in a browser on the monitoring pc.

¹ The HDMI cable is only used for its cable specifications. The HDMI standard is not followed at all.

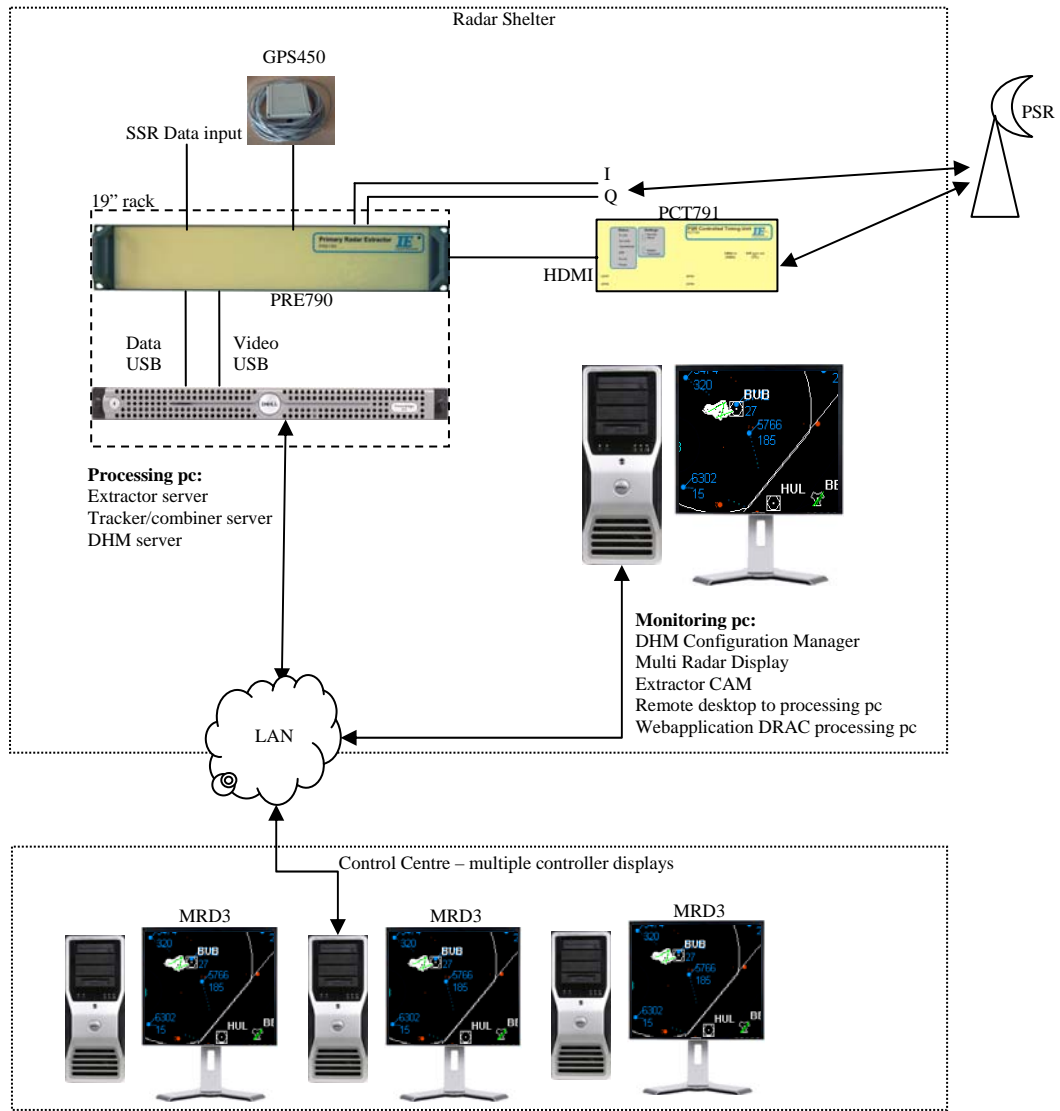


Figure 3-1: Example of hardware configuration

3.2 User interfaces overview

In the previous chapter, we have seen that different software modules communicate with different hardware modules, all installed on other pc's. The link between all computers is the local area network (LAN). The different software modules talk with each other using different socket-connections over TCP/IP. (both internal and external between 2 pc's) In the figure below, all coloured arrows represent a different socket connection.

On the processing pc, the PSR extractor server and the PSR Tracker server are running as a windows service. Both functions use 2 different sockets to communicate with the PSR Extractor CAM, which is installed on the monitoring pc. Remember that, if the processing is pc is not equipped with any keyboard nor screen, you can use Windows Remote Desktop on the monitoring pc to access the processing pc.

On the monitoring pc, there are the following user interfaces:

- The PSR Extractor CAM to configure and monitor the PSRExtractor server, the PSR Tracker/Combiner, the PCT791
- The DHM Configuration Manager, to configure and monitor the DHM server on the processing pc, with connection to the PRE790
- The MRD3, displaying information configured in DHM sessions on the processing pc.

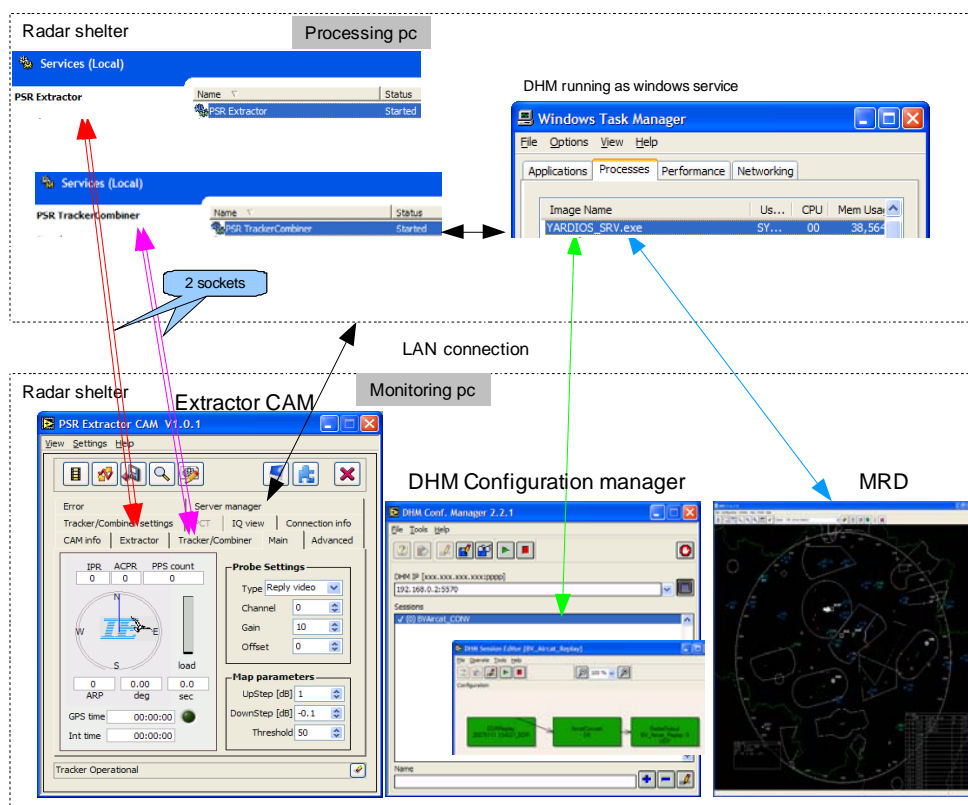


Figure 3-2: User interfaces overview



Setting up the PSR extractor requires good knowledge of networking. All the settings must be made in the appropriate ini-files (refer to the technical manual *IE-PSR-Extractor-TM-vxx.pdf*).

4. Extractor CAM

The Extractor Control And Monitoring user interface runs on the monitoring pc. It is used for monitoring the extractor server and the tracker/combiner server on the processing pc. It is also used for the PCT791. Directly from this user interface, you can also do the following: start/stop the DHM server on the processing pc, restart the processing pc, open the DHM Configuration Manager or the Multi Radar Display.

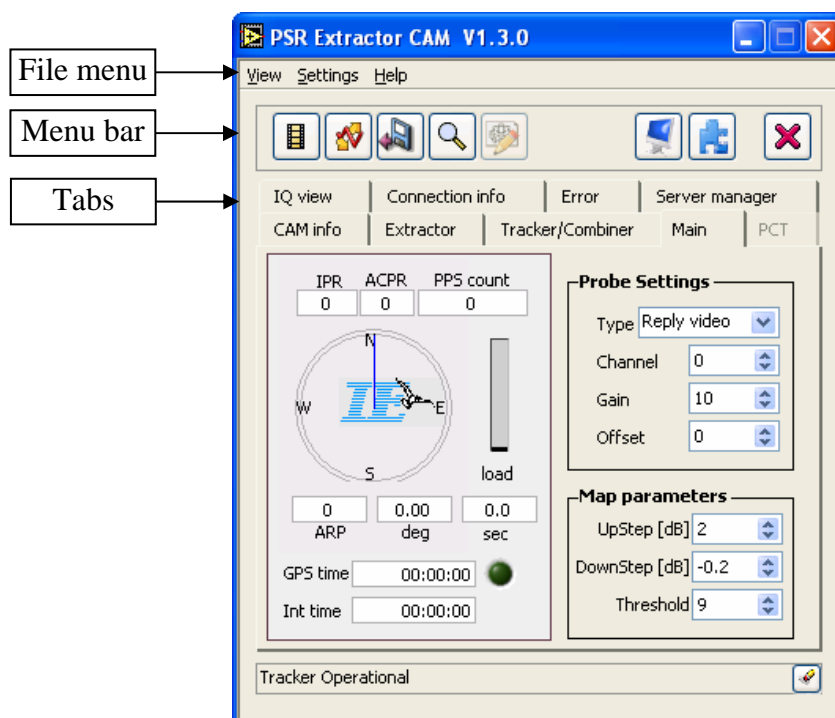


Figure 4-1: CAM User Interface



It is very important to remember that the PSR Extractor CAM runs on the monitoring pc.

4.1 File menu

An overview of all the available menu items is given in Table 4-1.

Table 4-1: Menu bar

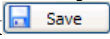
Menu	Usage
View	
↳ View Eventlog	Opens the Info/Warning/Error Viewer window
↳ Recorder	Opens the File Recorder Window
↳ System Load Display	Opens the System Load Display Window
Settings	
↳ Probe Settings	Opens the Probe Setting Editor
↳ STC Fixed Att. Setting	To load the STC settings (only active when the PCT791 is connected)
↳ Advanced settings editor	To load the Advanced settings editor
↳ PCT Flash programmer	To load the PCT Flash Programmer
↳ PCT Flash Editor	To load the PCT Flash Editor
Help	
↳ About	Application Summary dialog

The different menu items will be explained in further detail in the next paragraphs.

4.1.1 View EventLog

When you click “View ↳EventLog”, the “Info/Warning/Error Viewer” will be opened. (Figure 4-2: Info/Warning/Error Viewer)

This list logs all Info, Warnings and Errors that happen in the software.

You can select whether you want to see the errors, warnings, or info using the drop down menu. If you click , a window will prompt that asks you to save the current information in a .log-file.

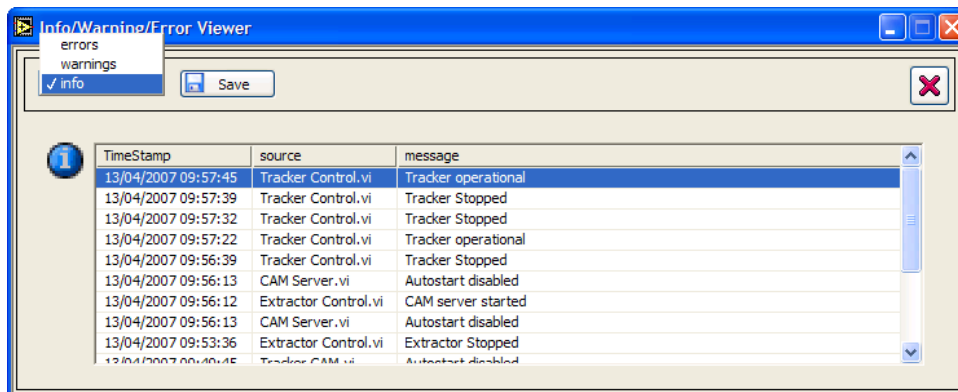


Figure 4-2: Info/Warning/Error Viewer



This information is very useful when troubleshooting your system, since all steps are logged here.

4.1.2 File recorder

By clicking “View ↪Recorder” or by pressing  (see 4.1.5), the following window will prompt:

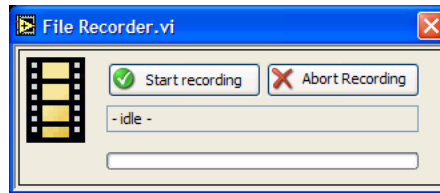


Figure 4-3: Recorder window

If you click to start the recording, the software will record the I/Q data. This data will be saved in a .2MHz file. The path of this recording is set in the default.ini-file in the Extractor Server folder. Similar to the recording path, the file size can be set in the default.ini-file. (See technical manual IE-PSR-Extractor-TM-vxx.pdf). When the maximum file size is reached, the recording automatically stops. Then, a new ‘Start’ is necessary for a next recording.



Note that this recording only records I/Q data. The secondary data can be recorded in the DHM. Doing a replay of files that you recorded yourself, is not possible in this software version. It is necessary to synchronize the primary and secondary data in a separate software tool that is not part of this CAM software.

4.1.3 System Load Display

By clicking “View ↪ System Load Display, the following window will prompt:

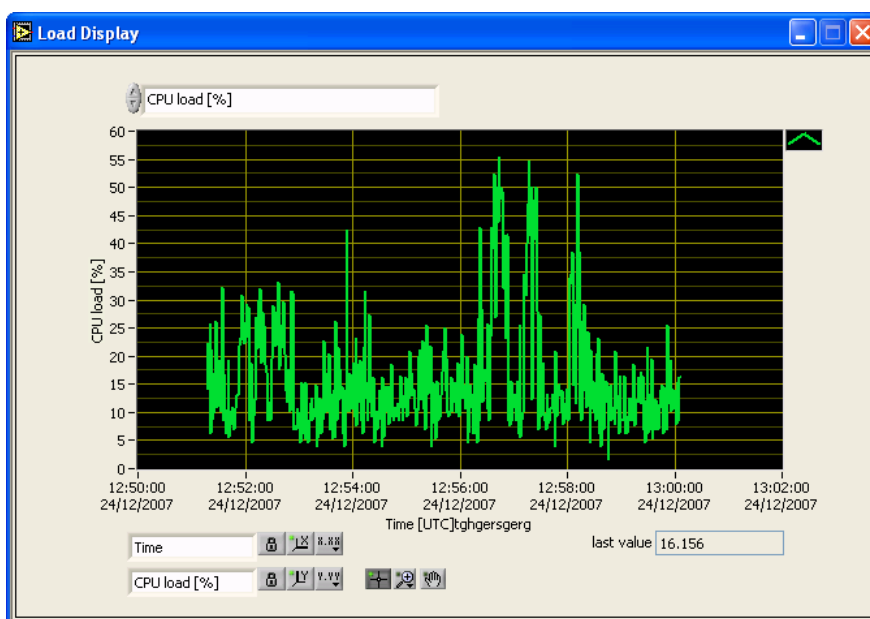


Figure 4-4: System Load Display

When you click in the upper selection field, the following list of displays prompts:

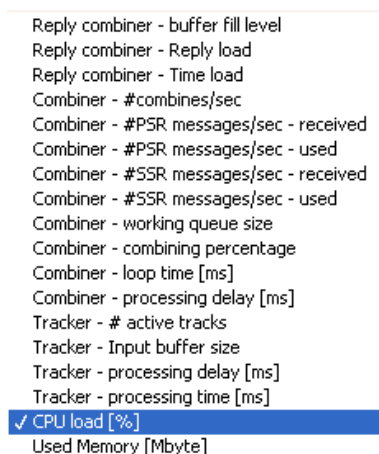


Figure 4-5 System Load Display - fields

When you select a field the last hour history is shown of the select parameter. Further explanation of the meaning of the fields will be given in the next paragraphs.

4.1.3.1 Reply combiner – buffer fill level

This item shows the buffer fill level of the reply combiner engine. This buffer stores the reply video coming from the device for further processing. The fill level is shown in %.

$[\#replies/buffer\ size * 100]$

4.1.3.2 Reply combiner – Reply load

The reply combiner engine is allowed to process a maximum number of replies per processing cycle. This parameter shows the actual used percentage of this maximum. $\{\#replies/reply\ limit * 100\}$.

4.1.3.3 Reply combiner – Time load

The reply combiner engine has a maximum loop time. The loop time is the time needed to do one processing cycle. This parameter shows how much time is used compared to the maximum loop time in %. $\{loop\ time/max\ loop\ time * 100\}$

4.1.3.4 Combiner - #combines/sec

The combiner combines primary plots with secondary plots. This value shows how much combines are completed per second (CS). The calculated value is a sliding average over 20 seconds.

4.1.3.5 Combiner - #PSR messages/sec – received

Shows the number of primary messages received, **including** sector messages.

4.1.3.6 Combiner - #PSR messages/sec – used

Shows the number of primary messages used, sector messages **excluded**.

4.1.3.7 Combiner - #SSR messages/sec – received

Shows the number of secondary messages received, **including** sector messages.

4.1.3.8 Combiner - #SSR messages/sec – used

Shows the number of secondary messages used, sector messages **excluded**.

4.1.3.9 Combiner – working queue size

When you select this field you can see the number of plots in memory where the combiner engine can work with. If this value is too small, the combiner has not much possibilities of combining. If this value is too large it takes more time to compare all probabilities.

4.1.3.10 Combiner – combining percentage

The combining percentage (CB) gives an indication of how much matches there are made between PSR and SSR plots. In an ideal situation there is for each primary plot a matching secondary plot, so the combining percentage will be 100% in that situation. An example:

#PSR messages/sec–used = 30

SSR messages/sec–used = 20

#combines/sec = 17

=> CB= $17 / [(30+20)/2] * 100 = 68\%$

So the combining percentage is calculated by summing the number of primary plots and the number of secondary plots, this sum is divided by 2. Then divide the #combines/sec by the previous result. $\{CB = CS/[(\#PSR+\#SSR)/2] * 100\}$.

4.1.3.11 Combiner – loop time [ms]

Shows the loop time of the combiner engine in ms

4.1.3.12 Combiner – processing delay [ms]

Shows the processing delay of the combiner engine in ms. The processing delay is needed to give the system time to receive the incoming PSR and SSR data. This delay is also used to compensate for different delays in the both PSR and SSR systems.

4.1.3.13 Tracker - # active tracks

Shows how much tracks are active in the tracker engine.

4.1.3.14 Tracker – input buffer size

When you select this field you can see the number of plots in memory where the tracker engine can work with. If the tracker finds a track he will search in this buffer for the best matching plot for that track.

4.1.3.15 Tracker – processing delay [ms]

This value shows the processing delay of the tracker engine. This means the delay between the target detection and when the track update leaves the tracker engine.

4.1.3.16 Tracker – processing time [ms]

Shows the loop time of the tracker engine in ms.

4.1.3.17 CPU load [%]

Shows the processor load of the processing server

4.1.3.18 Used memory [Mbyte]

Shows the used physical memory of the processing server.



This information is very usefull when troubleshooting your system. This info is stored on disk of the monitor pc for the last 100 days.You can find these loggings in the following folder: C:\Program Files\Intersoft Electronics\PSR Extractor\Extractor CAM\logs.

4.1.4 Probe Settings

By clicking “Settings → Probe Settings”, you can edit the Gain and Offset applied by selecting that probe in the “Main tab” of the CAM. The default values are stored in the CAM configuration ini-file.

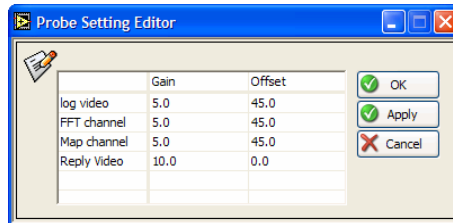


Figure 4-6: Probe Setting Editor

4.1.5 STC Fixed attenuation settings

See 4.3.2 PCT tab

4.1.6 Advanced settings editor

By clicking “Settings ↪ Advanced Settings Editor”, the following windows will prompt. Those parameters are used for fine tuning of different software processes, the extractor, the combining function and the tracker function.



These parameters may only be filled in by personnel having sufficient knowledge about its use.

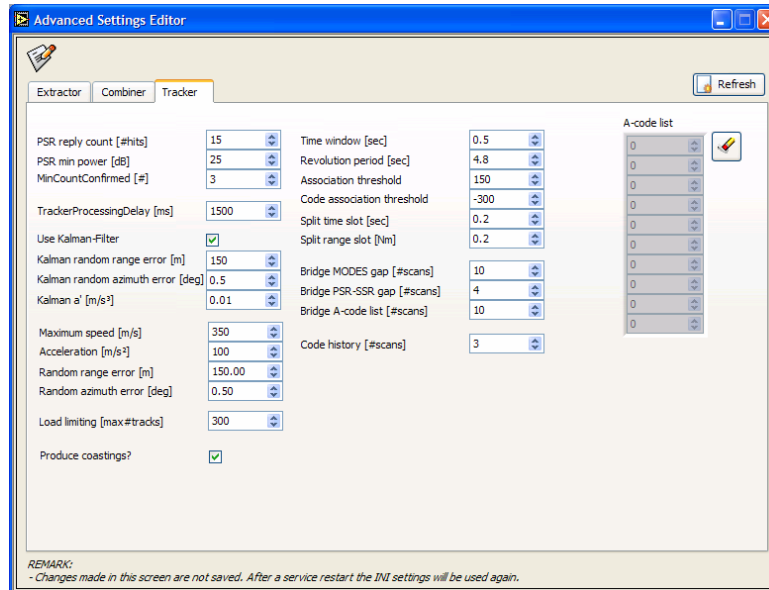


Figure 4-7: Advanced Settings Editor - Tracker

4.1.7 PCT Flash Programmer

By clicking “Settings ↪ PCT Flash Programmer”, the following window will prompt:

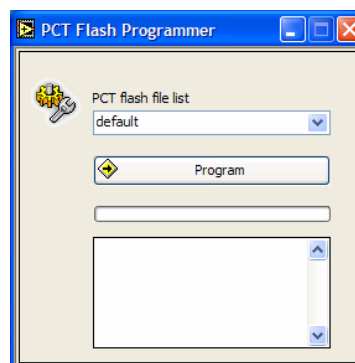


Figure 4-8: PCT Flash programmer

This dialog is used in combination with the PCT flash editor. (See next paragraph) When the STC- and Beam Switching-table are correctly filled in, the content can be loaded to the PCT791 flash memory when pressing “Program”. (a progress bar will start) Notice that this menu item is only available when the extractor is stopped. The Flash content of the PCT791 unit can not be programmed when the extractor is running.

4.1.8 PCT Flash Editor

By clicking “Settings ↪ PCT Flash Editor”, the following window will prompt:

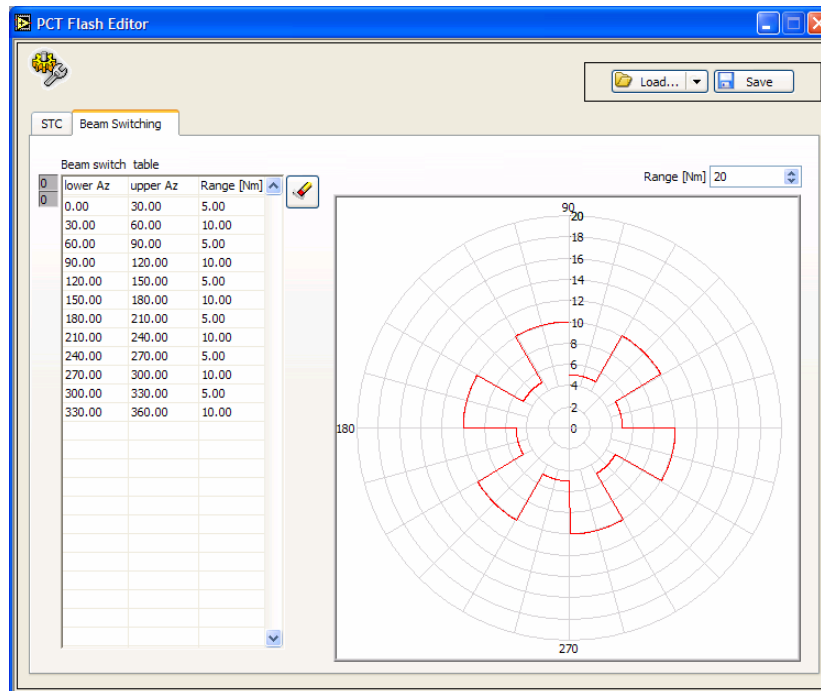


Figure 4-9: PCT Flash Editor – Beam switching table

In the table above, you can fill in the beam switch table that can be loaded into the PCT791 flash memory. Click to load a correct flash file, click to save and to erase the current table contents. The flash files are stored at the following location on the **server**: C:\Program Files\Intersoft Electronics\PSR Extractor\Extractor Server\FlashContent

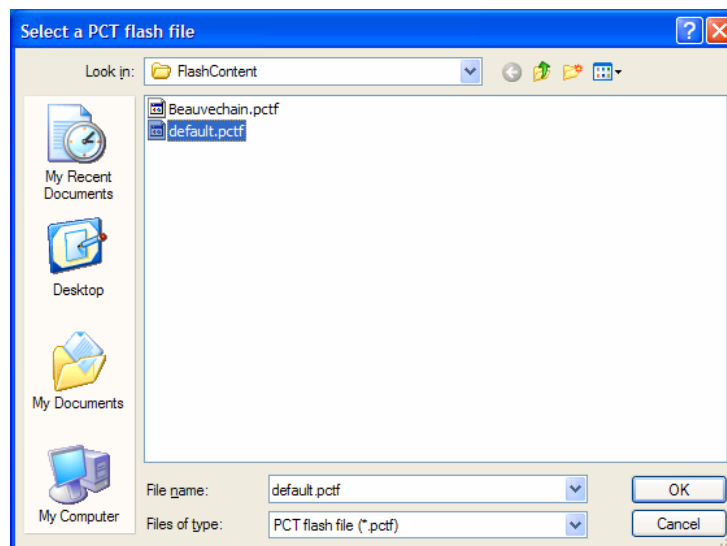


Figure 4-10: Select PCT flash file

When you click the STC map, the following window will open. Similar to the Beam switching table, you can load a file or manually fill in the table.

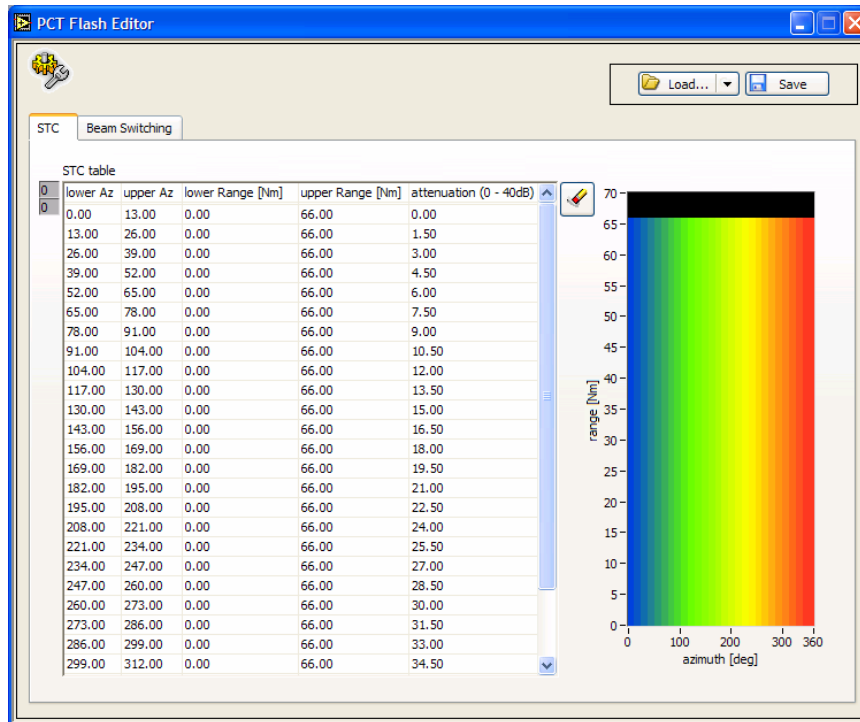


Figure 4-11: PCT Flash Editor – STC table

4.2 Main toolbar









The main toolbar is displayed in the following figure:



Figure 4-12: Main toolbar

Error! Reference source not found. describes the functions of the main toolbar.

Table 4-2: Main toolbar

Button	Usage
 Recording display	Open the Recording Display. This does the same as choosing “View ↪ Recorder” in the Menu bar.
	Triggers manual offset compensation
	Save clutter map
	Opens the IQ tab (This will be explained in 4.3.8 I/Q view tab)
	Load PCT791 Time Settings
 MRD3	Launch the MRD3 (Refer to the manual about the Multi Radar Display) The MRD3 can also be launched in the RASS-R toolbox.
 DHM	Launch the DHM configuration manager (Refer to the manual about the Data Handler Module) The DHM can also be launched in the RASS-R toolbox.
 Exit	Quit the application

The different buttons of the menu bar are now described in more detail.

4.2.1 Manual offset compensation

When you click the manual offset compensation button the system will search for a minimal video offset setting for both I and Q channel. So if you notice a video offset by using the IQ view you can use this button to minimize this offset. Offset compensation is automatically executed by every start of the extractor.

4.2.2 Clutter Map

When you click the “save clutter map button” , the following dialog will open:

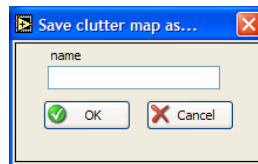


Figure 4-13: Clutter Map

A clutter map contains the static objects seen by a radar: for example mountain reflections, obstacles or other not moving parts. On the other hand, also dynamic objects like weather can be stored in the clutter map. This means that the clutter map is continuously changing while the Extractor is running.

The clutter map file is split up in 16 clutter maps, one for each bin. The size of one map is 1024x1024 cells. Each cell contains an 8 byte value.

When this window prompts, you can give in a name to save the current clutter map. It will be saved in C:\Program Files\Intersoft Electronics\PSR Extractor\Extractor Server\ClutterMaps. (.clmp-file)

When the name already exists, it will overwrite the old map.

4.2.3 PCT ini-file

When you click the “PCT791 button” , the following dialog will open:

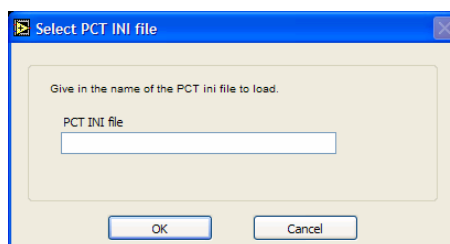


Figure 4-14: PCT INI file

This window is used to load the time settings into the PCT791 unit. Therefore, it is only enabled in live mode. The directory with the PCT791 ini-files is: C:\Program Files\Intersoft Electronics\PSR Extractor\Extractor Server\TimingPrefs on the processing computer (server). For detailed description of this ini-file, consult the Technical Handbook.

4.3 Different tabs

In the next paragraphs, the different tabs of the Extractor CAM are explained.

4.3.1 Main tab

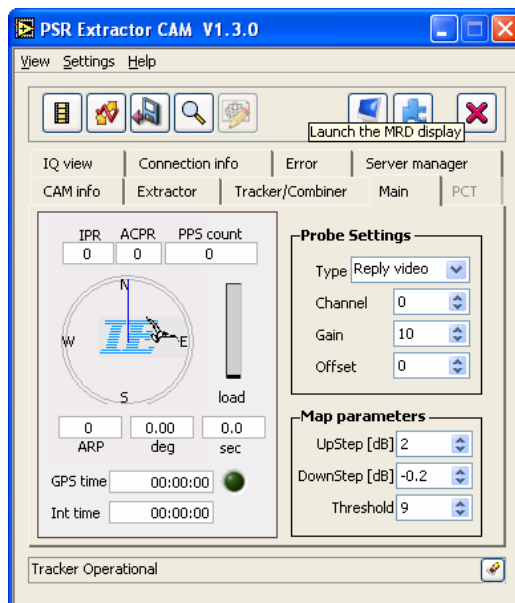


Figure 4-15: Main tab

The “Main tab” has the following items:

General window

- IPR: Interrogations Per Rotation. This value depends on the PRF and the radar rotation time.
- ACPR: Azimuth Change Pulse Rate, i.e. 4096 pulses per cycle
- PPS Count: Pulses Per Second (GPS seconds counter when GPS450 connected)
- ARP: Azimuth Reset Pulse, increments during live or replay mode
- Deg: displays the bearing of the radar in degrees
- Sec: displays the revolution time of the radar
- GPS Time: the GPS450 time will be displayed here (format: time of week)
- Int Time: [UTC] time at the moment of interrogation. (format: time of day [TOD])

Probe Settings

- **Type:** select how the video will be displayed to the MRD3. The parameters will change according to the “probe settings editor” values.
 - Log video: represents the result of the next formula of the I and Q video signal: $20 \cdot \log(\sqrt{I^2 + Q^2})$
 - FFT channel: output of the selected Doppler filter. [dB]
 - Map channel: output of the selected clutter map. [dB]
 - Reply Video: displays the video above the clutter map + threshold for all 16 output bins. The amplitude is the signal above the clutter map. [dB]
- **Channel:** this is only used on FFT and Map Channel probe. It selects the appropriate bin out of 16.
- **Gain:** controls the gain of the video on the MRD
- **Offset:** this value can be used to compensate DC offsets.

Map Parameters:

- **Upstep:** defines the value that has to be added to the clutter map cell if the new cell value is greater than the old cell value
- **Downstep:** defines the value that has to be subtracted to the clutter map cell if the new cell value is lower than the old cell value
- **Threshold:** The FFT result has to be greater than the clutter map cell value + threshold to output the result.

4.3.2 PCT tab

This tab only becomes active when the PCT791 is connected to the system.

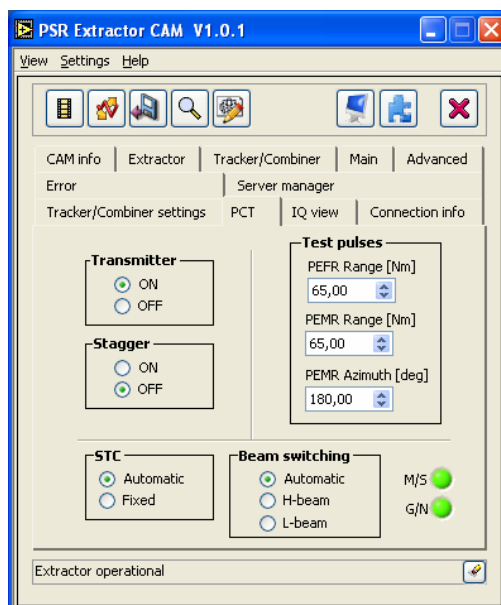


Figure 4-16: PCT tab

The following settings can be made:

- **Transmitter:** you can switch the timing generation of the PCT unit On/Off with this control.
- **Stagger:** turn the stagger On or Off
- **STC:** you can select the automatic STC generation or fixed. When the automatic mode is selected the content of the flash in the PCT unit will be used as STC. If you select the fixed mode, the values given in the setting window are used (see picture below). You can find these settings in the menu under Settings ↪ STC fixed attenuation settings

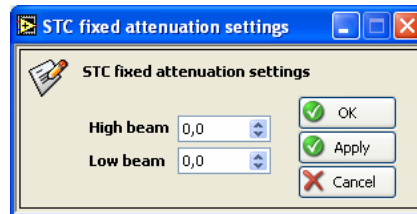


Figure 4-17: STC fixed attenuation settings

- **Test pulses:**
 - **PERF Range:** this value controls at what range the fixed test pulse is placed. The fixed test pulse will appear for all azimuths.
 - **PEMR Range:** this value controls at what range the moving test pulse is placed.
 - **PEMR Azimuth:** this value chooses at what azimuth the moving test pulse is generated. The test pulse will start at the value given and lasts for 15 ACP's.
- **Beam switching:** you can choose between 3 modes
 - **Automatic:** the content in the flash of the PCT791 unit will be used for beam switching.
 - **H-beam:** the high beam is selected. The content of the flash is overridden.
 - **L-beam:** the low beam is selected. The content of the flash is overridden.
- **LED's:**
 - **M/S:** Master / Slave: corresponds to a PCT791 setting
 - **G/N:** Generator / Normal: corresponds to a PCT791 setting

4.3.3 CAM info tab

In the “CAM info tab” we can distinguish 4 sections:

- **General Info:**
 - Engine state: displays when the engine is operational or not
 - Loop time: CAM engine loop time, for debug purposes
 -
- **Autostart:** if there’s no CAM connection, the extractor and tracker will auto start after a certain time (in configuration files). If there is a CAM connection this auto start decision depends on this setting.
- **Event Filter List:**
 - Sector Messages UDP: if ON, sector messages will be send over UDP (in track and plot output streams). It is strongly recommend to leave this ON.
 - Sector messages CAM: if ON, the PPI on the main tab will follow the antenna rotation.
- **SubEngine Status:** displays the status of the .vi sub-engines

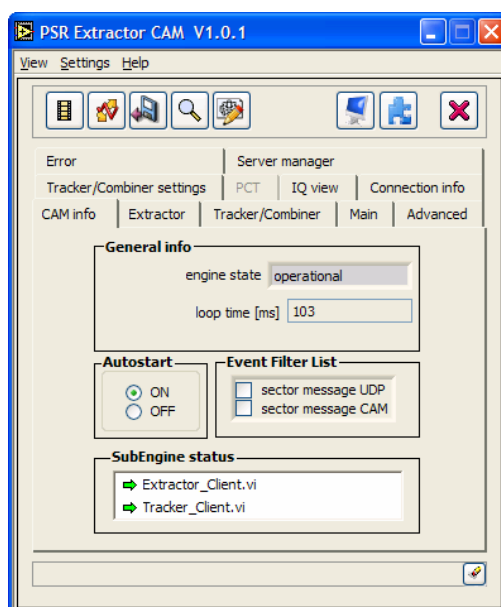
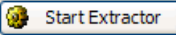
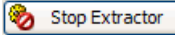


Figure 4-18: CAM info tab

4.3.4 Extractor tab

The “Extractor tab” shows the information about the modules running on the Extractor PC. The Extractor itself is running in the background of the Extractor PC as a Windows service. By clicking  or , you actually start or stop the Extractor. The meaning of the LED's is as follows:

- **Live?:** green if live mode is selected
- **Extractor Error:** if there is an error, it will be displayed in the text bar below or in the “Error tab”.
- **Extractor running:** if the VI's are loaded and the Extractor is running. (By clicking Start or Stop) In the right figure below, the CAM is connected and the Extractor is running.
- **CAM connection:** if the connection with the Extractor is made, but not started yet. (the VI's are not running – yellow color) In the left figure below, the CAM is connected to the Extractor but the Extractor is not running.

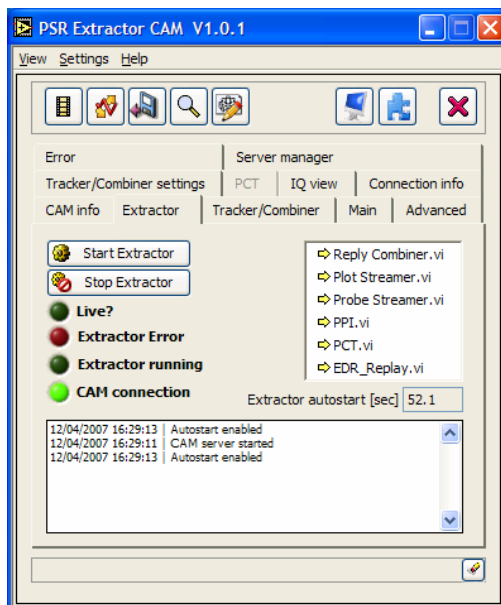
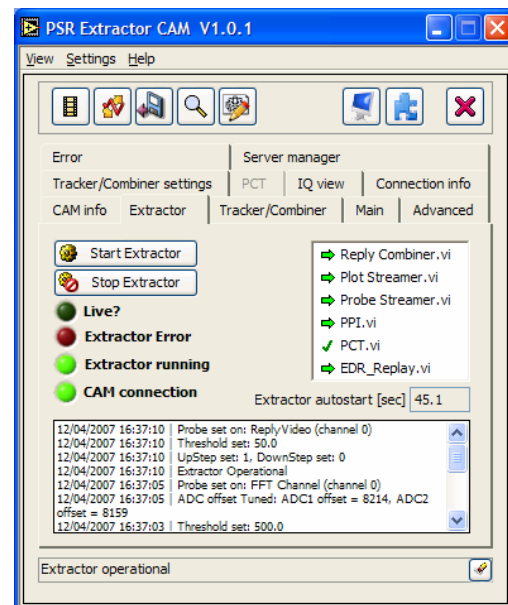


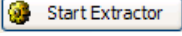
Figure 4-19: Extractor tab Connected



Running



*The PCT.vi is only running when programming the PCT791 flash memory.
The EDR_Replay.vi is only running when the extractor is in replay mode.*

When you click , it will prompt the following window:

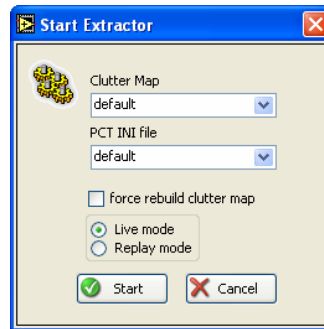


Figure 4-20: Start Extractor

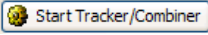
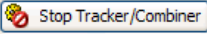
The following settings can be made:

- **Clutter map:** select which clutter map must be used. This can be overruled by clicking the button in “force rebuild clutter map”.
- **PCT file:** select the PCT file to be used
- **Live mode:** the Extractor then works on real live data.
- **Replay mode:** the Extractor works on data that is recorded on disk. When this option is chosen, Figure 4-21: Replay File Select prompts. You can choose between the available recordings made. Also some comment will be shown.



Figure 4-21: Replay File Select

4.3.5 Tracker/Combiner

The “Tracker/Combiner tab” shows the information about the Tracker/Combiner that is running on the Extractor PC. The Tracker/Combiner itself is running in the background of the Extractor PC as a Windows service. By clicking  or , you actually start or stop the Tracker/Combiner. The meaning of the LED's is as follows:

- **Tracker Error:** if there is an error, it will be displayed in the text bar below or in the “Error tab”.
- **Tracker running:** if the VI's are loaded and the Tracker/Combiner is running. (By clicking Start or Stop) In the right figure below, the CAM is connected and the Tracker/Combiner is running.
- **CAM connection:** if the connection with the Tracker/Combiner is made, but not started yet. (the VI's are not running – yellow color) In the left figure below, the CAM is connected to the Tracker/Combiner but the Tracker/Combiner is not running.

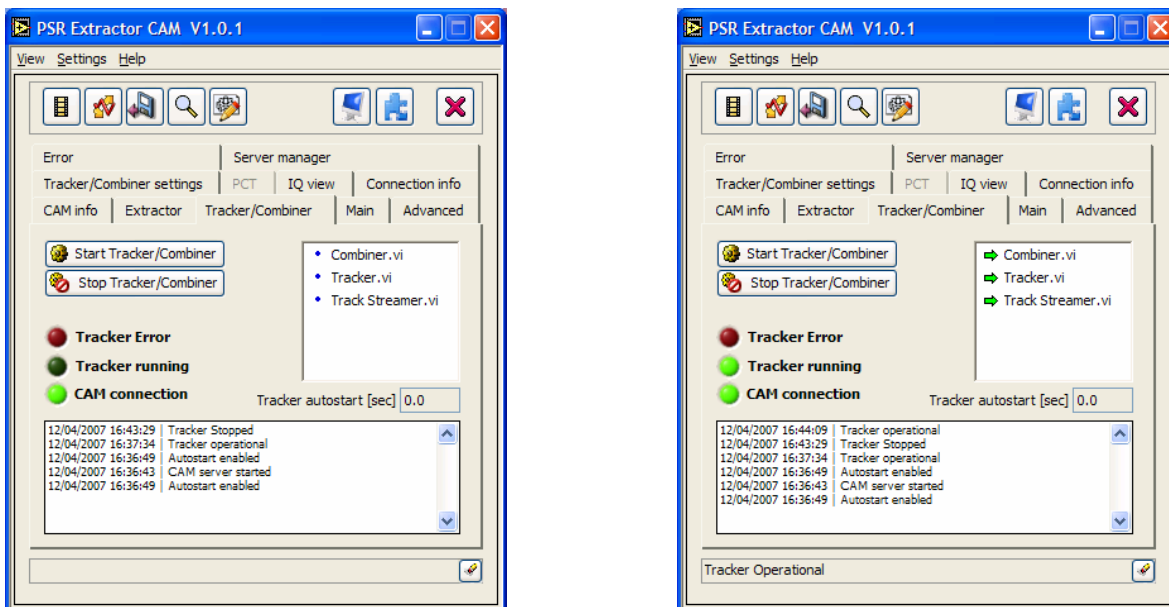


Figure 4-22: Tracker/Combiner tab Connected - Running

4.3.6 Connection info tab

The “Connection Info Tab” shows info about the Extractor and the Tracker/Combiner. As you can see in Figure 4-23, the CAM has 2 socket connections per module. If those socket connections are established between the CAM and the Extractor or Tracker/Combiner module on the processing pc, the status will be “connected”. If the socket connection is not established, the status will be “Initiating”. (Those socket connections are graphically represented in Figure 3-2: User interfaces overview)

The LED's show what kind of information is sent between the CAM and the modules:

- **Command:** in case a command or inquiry is sent. (client initiated)
- **Reply:** in case a reply is received.
- **Event:** in case an event occurs. (Server initiated)The explanation of the event may appear in the text field below. (Figure 4-24)

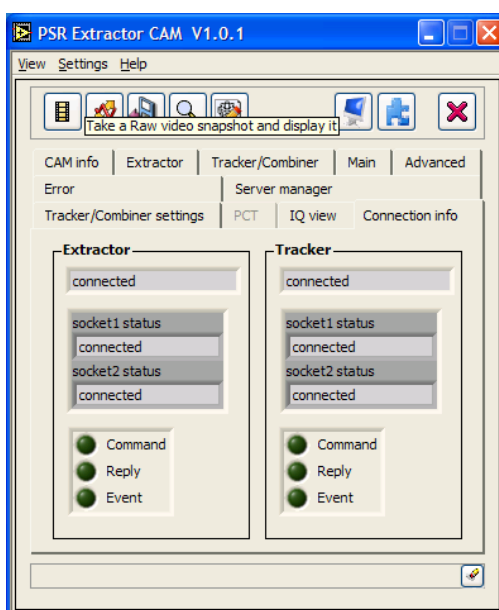


Figure 4-23: Connection Info tab

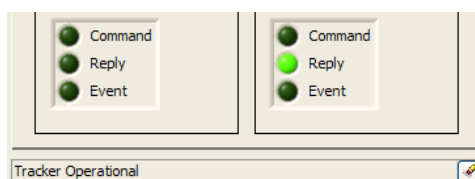

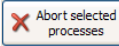


Figure 4-24: Example of event

4.3.7 Server Manager tab

The “Server Manager Tab” has the following functions:

- **DHM-service:** You can Start or Stop the DHM server that is running as a Windows service on the processing pc. You see also the current status, in the figure below this is ‘running’.
- **Restart server:** if you want for some reason to restart the complete processing pc without accessing it, you can use this button to do a remote restart of that pc. (A complete restart, together with other functions can also be performed with the DRAC webinterface when applicable.)
- **DHM process:** You can see which DHM sessions are running on the DHM on the processor pc. If you also connect to the DHM server by clicking , the sessions become active and you can choose the  button. (see figure Figure 4-26)

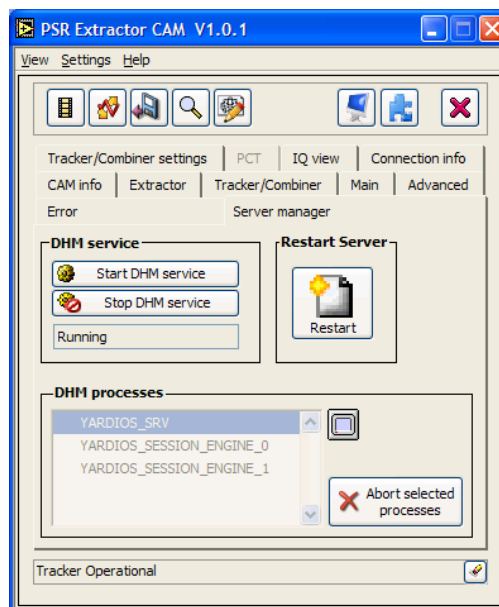


Figure 4-25: Server Manager tab

The info in the text field is also saved in the “Info/Warning/Error Viewer”, section “Info”.

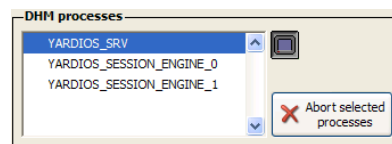



Figure 4-26: Abort DHM sessions

4.3.8 I/Q view tab

When you click the  button and open the IQ view tab, a snapshot of that moment from the raw IQ video will be taken and displayed. The graph will display all video data that was received at that moment. Closer to the radar (a few μs on the X-axis), the amplitude will be higher than further away from the radar. The white graph is the I-signal, the red is the Q-signal.

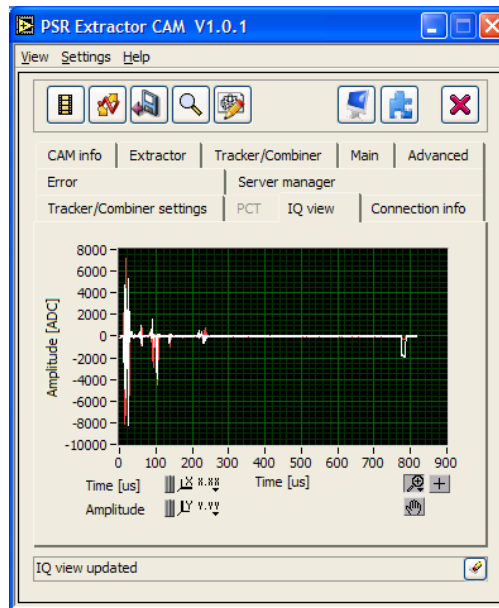


Figure 4-27: IQ view tab

Using the standard Labview buttons for graphs, we can easily zoom on the graph. Two examples are displayed below.

Example 1: You see the I/Q view of a test pulse. The figure below show the log-video of the test pulse. ($20 \cdot \log(\sqrt{I^2+Q^2})$)



Figure 4-28: Detailed IQ view of a test pulse

Example 2: displays first the IQ view of a possible target. The graph below is the log-video signal. ($20 \cdot \log(\sqrt{I^2+Q^2})$)

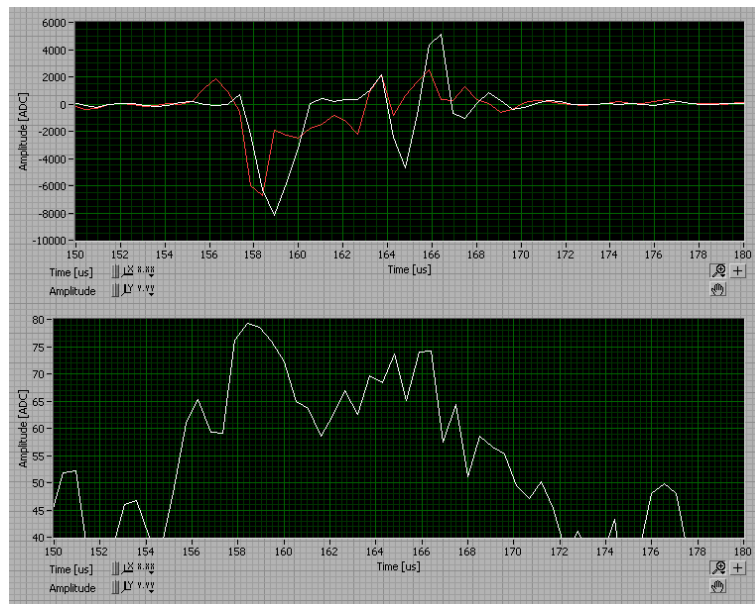


Figure 4-29: Detailed IQ view of a possible target

4.3.9 Error tab

All errors that occur are displayed as in Figure 4-30: Error tab. For each error, the following information is shown:

- **Timestamp:** the time that the Error occurred.
- **Source:** the particular .vi that generates the error.
- **Code:** for internal use
- **Description:** describes the error

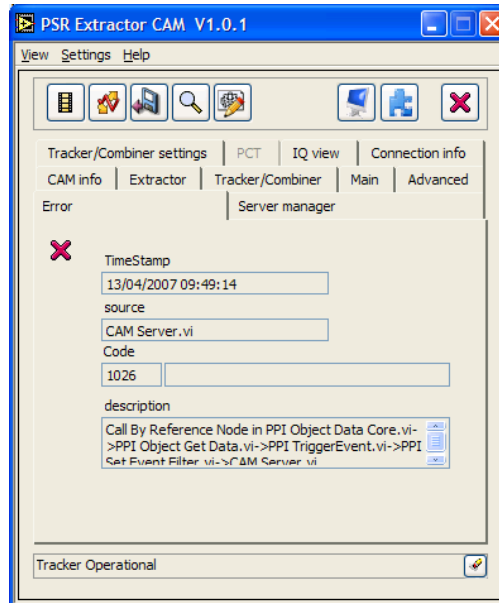


Figure 4-30: Error tab

All these errors are also saved in the Info/Warning/Error viewer –window, section errors. (See 4.1.1)

5. Troubleshooting

Next paragraph explain some things that can be used during troubleshooting the system.

5.1 Network testing

To test if the monitoring pc has a proper network connection with the processing pc, you can use the ping command on the monitoring pc. Follow the next steps:

Open the DOS-prompt using the run-window.

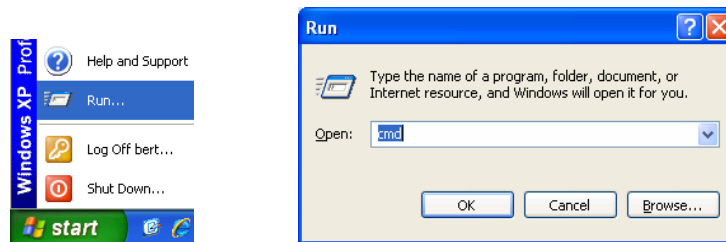


Figure 5-1: Run dialog

Suppose that the IP address of the processing pc is 192,.168.0.92. In the figure below, the ping command is successful, which means good connectivity.

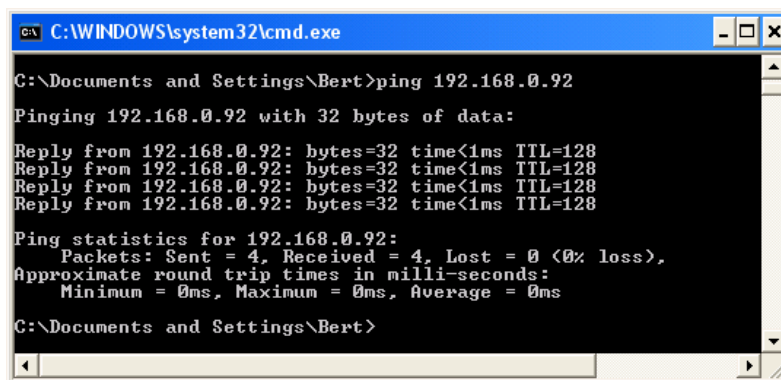


Figure 5-2: Ping command

To check the ip-address of the local computer, you can type “ipconfig”:

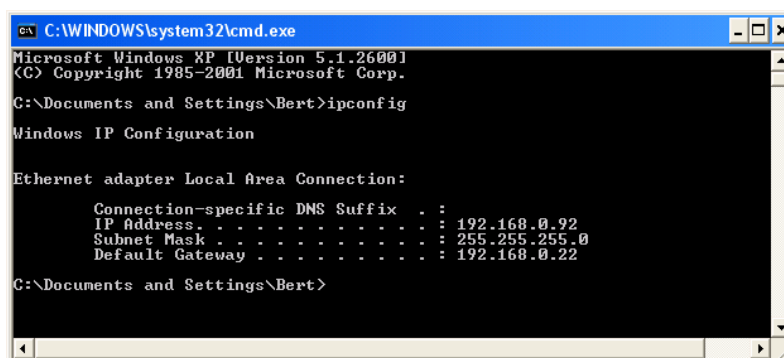


Figure 5-3: Ipconfig command

5.2 Problems with connection to Extractor or Tracker/Combiner server

Suppose you see no information at all in the Extractor tab.

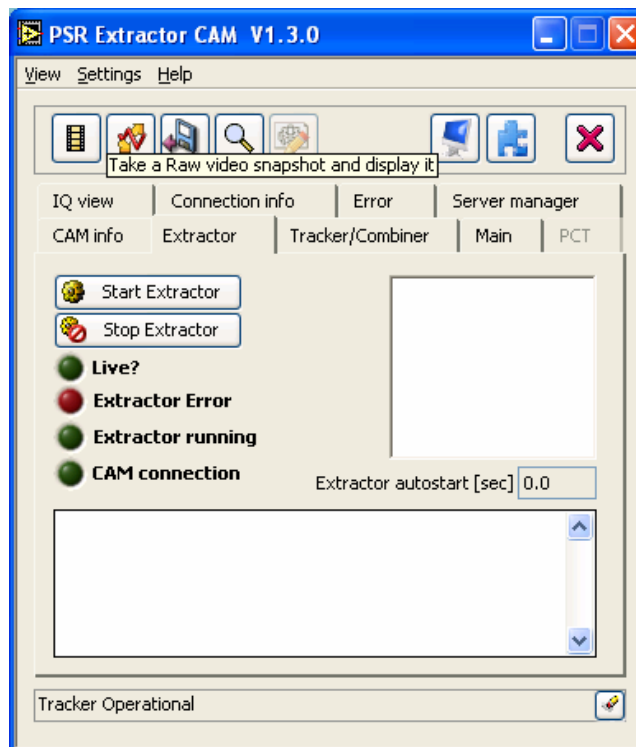


Figure 5-4: Communication problem

This means that a socket connection between the PSR Extractor CAM and the Extractor server cannot be made.

This can be caused by networking problems or wrong settings in the different ini-files (refer to the technical manual IE-PSR-Extractor-TM-vxx.pdf)



This does not mean that the Extractor server itself is not running! This gives only an indication about the fact that no communication to the extractor server can be established.

A similar explanation is true for the tracker/combiner server.

5.3 How to check if a Windows service is running?

The following process run as Windows services and are only visible as an executable in the taskmanager:

- Extractor server.exe (on processing pc)
- Tracker server.exe (on processing pc)
- YARDIOS_SRV.exe (DHM-server on processing pc and monitoring pc)

So, use the taskmanager to see whether the executables are running is not. Those three services automatically start when the computer starts up.

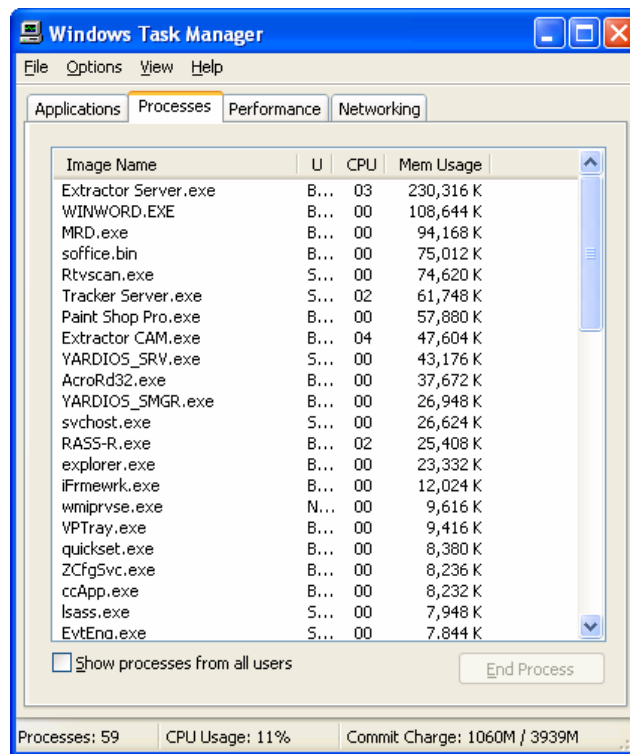


Figure 5-5: Taskmanager

5.4 How to restart a Windows service

The Windows service dialog can easily be started by typing the following run command:

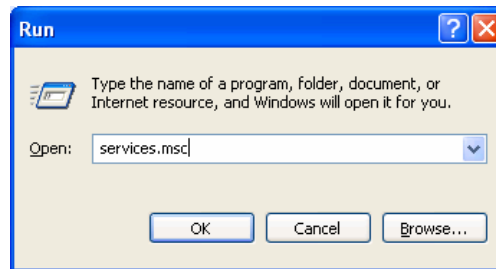


Figure 5-6: Run command

In the services window, you can use the buttons or a right click on the appropriate services for a start-, stop- or restart-action.

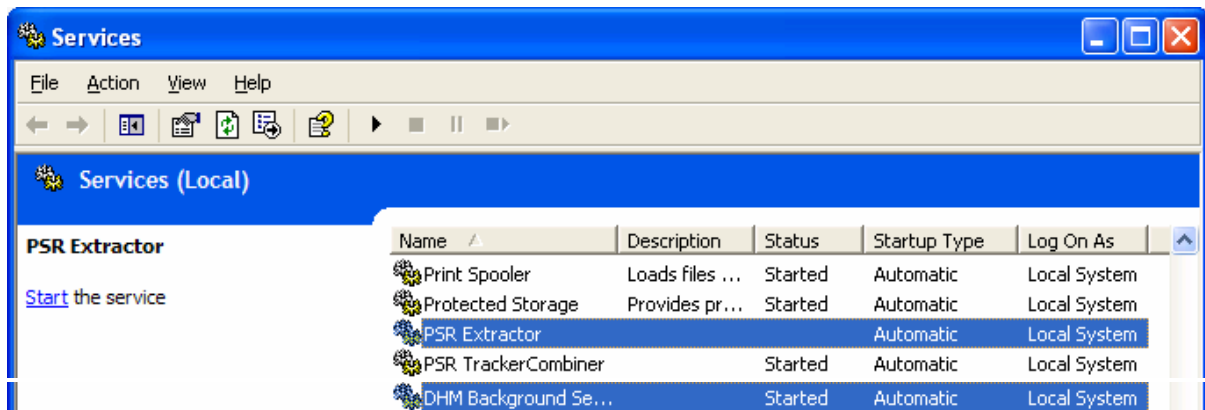


Figure 5-7: Windows services

6. Appendix: how-to-do

6.1 How to select a file on an other computer

Open the run dialog:

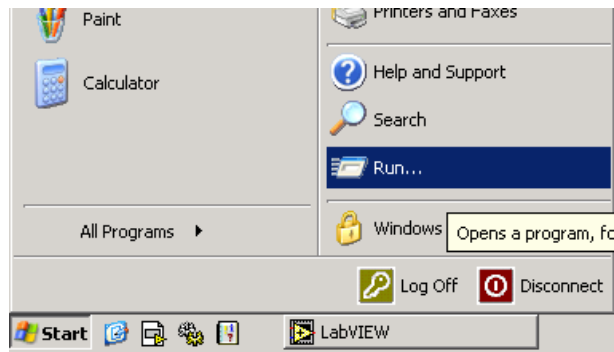


Figure 6-1: Run select

Type in the following text: `\\xxx.xxx.xxx.xxx\c$` where the x's are replaced by the IP number of the remote computer. In this example the c-drive is selected, to select an other drive replace the c by the drive letter wanted.

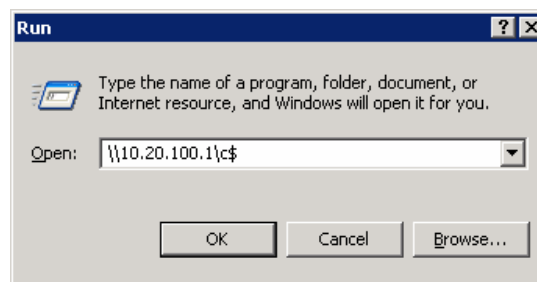


Figure 6-2: Run dialog - remote disk

It can be needed to log on to the remote computer by using a username and password

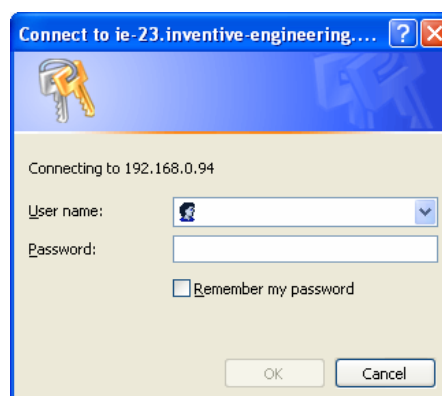


Figure 6-3: Log on

6.2 Open a remote desktop connection

Open the remote desktop connection dialog

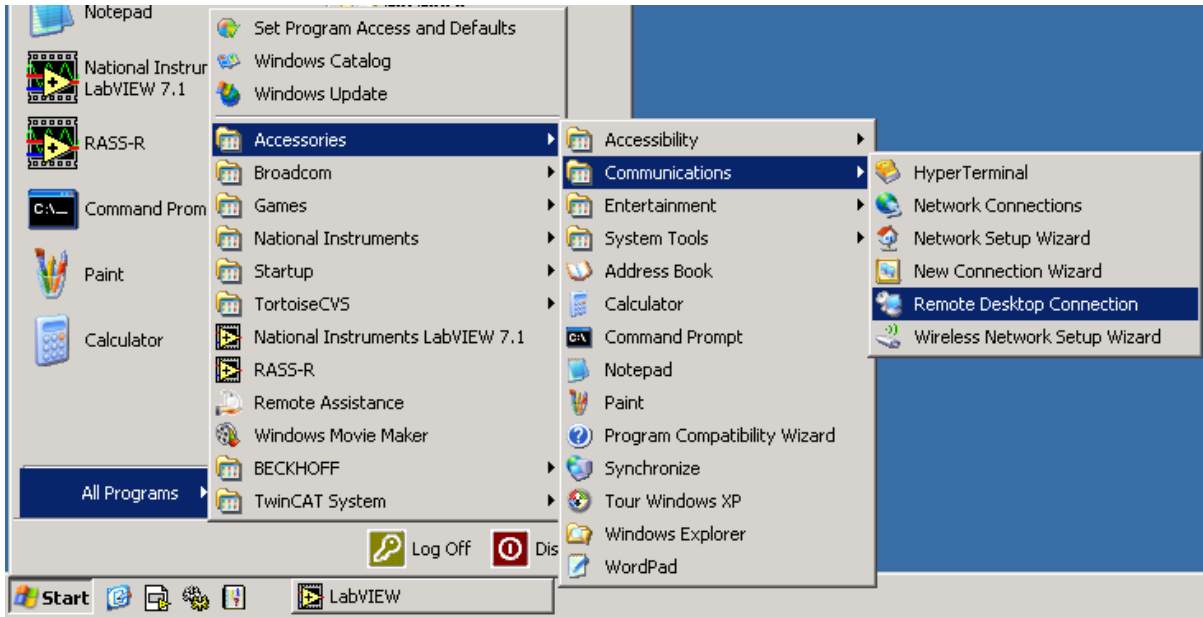


Figure 6-4: Remote desktop connection dialog

Type in the IP address of the computer of which you want to open the desktop

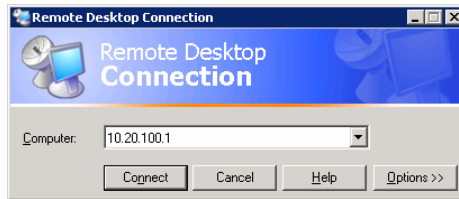


Figure 6-5: Remote desktop connection computer



When you want to establish a remote desktop connection to a remote pc, this remote pc must permit that somebody has remote access to it. This can be set in the computer properties:

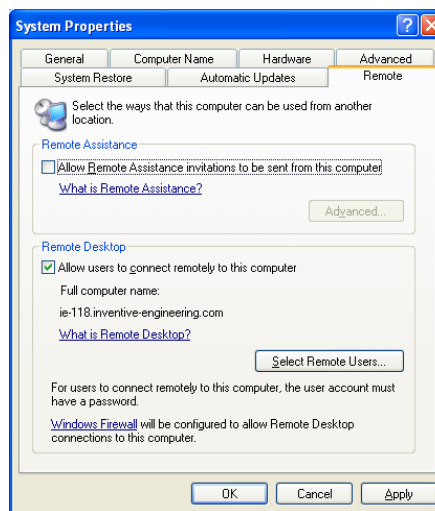


Figure 6-6: Allow remote desktop