**What is ACIT-Library** ? (Air Conditioner Inverter Thermal Library)

ACIT Library is an inverter based air conditioner software library in order to accomplish inverter thermal cycle . Library is developed in C –Language

which can be used with ANSI-C and C++ Compilers. It can be run on either embedded microcontrollers or on PC environment.

Even though library is not developed with full Object Oriented Principle (OOP) the main philosophy is to be compatible with Object Oriented Philosophy.

So it is compatible with most common embedded Native-C applications that can run on a microcontroller, as well as C++ or C applications that can

run on a PC even with a graphic user interface.

Acit Library comprises of all thermodynamics issues of an inverter air conditioner. Requires desired operation mode ,set temperature, temperatures of

the system and environment. Calculates Required compressor frequency and position of an electronic expansion valve and other valves as an output which

can be applied directly to compressor and expansion valve driver.

**What is ACIT- Emulator**? (Air Conditioner Inverter Thermal Emulator via USB)

It is a Windows based software which can run all operations of an inverter air conditioner Software utilizes ACIT Software Library that is developed under

Microsoft .NET environment.

Software communicates with hardware drivers like compressor, expansion valve and temperature reading parts in order to run thermal cycle.

In this case software communicates with a physical inverter type air conditioner, runs and controls the physical air conditioner with an interactive interface.

Graphic interface gives an opportunity to observe and modify the operations in details

With data logging and charting options.

**What is ACIT-Simulator** ? (Air Conditioner Inverter Thermal Simulator)

It is a simulator that runs in coordination with ACIT-Hardcom. It is improved from ACIT- Hardcom and uses the same graphic interface with ACIT- Hardcom.

The difference is at Simulator mode there is neither hardware nor a driver to communicate with a physical air conditioner.

In this case all inputs are supplied by the user from the graphic user interface and the outputs can be observed or logged in order to realize the system on a PC.

This gives an opportunity and convenience to develop, modify or observe the Library or system without any need of any hardware.

**History**

While having a mission; to be able to design a control system for an Inverter Type Air Conditioner I started to design a library. for all thermal cycle that consists

basic functions like cooling, heating, defrost and all reliability functions. After starting the design, the idea to flavour it with a Graphical User Interface

that can be able to run either on PC or an embedded system shaped on my mind.

It was inevitable to choose C language for an embedded system, however to run on a PC, I had to use an environment that has graphics libraries and covers

C language. The best environment that I choose was Microsoft s .net Environmet with C++ Languge. C++ is an object oriented language that was derived

from C language. So if I could create a library that can run with C and C++ , than I could be able to run the library on both. So I did.

The library does not take all advantages that a typical object oriented library has. Instead more simple that includes variables and functions which C Language

can interpret and C++ as well !!. So ACIT Library which is an abbrevation of Air Conditioner Inverter Thermal started like that.

The Graphical user Interface is designed at .net environment so flourished with all advantages of an Windows Graphics. With the graphical inputs you can change

the inputs and monitor the outputs and many other details. So while running on the PC without connecting any hardware it runs as a Simulator.

But when you connect to the drivers that are on a real Physical Air Conditioner then it becomes the Control Software of the Air Conditioner with

sophisticated logging and monitoring ability.

So while developing any new function or algorithm first you can test it while running as a Simulator. After verifying you can connect to the Physical environment

and run on the real system. Of course you will gain the advantages in terms of development time .Actually I call it as 'What you See is What You Have Done' .

You can even test a new functions or modify the paramters only on the Simulator on the PC then directly download to the embedded system and send

for manufacturing !!

I hope you will enjoy it !

if you have any questions please do not hesitate to contact me

With Best Regards

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**More About Library**

Library consists of related Algorithms (API’s) and all predefined constant values. This Library is prepared by taking the reference of Outdoor Integration

Type RS(Requirement Specification) Document, Option table data’s and other relevant data’s. Library is created in ANSI C in order to keep compatibility

between PC code and embedded code so they can be considered as portable if you use library to develop at any C or C++ environment.

For example ACIT Simulator is developed at .NET framework C++ which is the closest environment to ANSI C with a Visual User Interface.

**About Charts & Graphics**

Charts and Graphics at Acit-Sim like Mollier Diagram and Log Panel is developed by NPlot library. For more refer to below link:

<http://netcontrols.org/nplot/wiki/>