

Recent Internet developments have enabled us to obtain DX information, wherever we are. We are exposed to real time information on the particular Mailing List regarding mobil communication.

The trouble is, however, that I cannot sit down to my wireless transceiver at home all day long, so I have missed an opportunity of making use of such mobile operation technique.

Therefore, I long envisaged to manipulate my transceiver at a distance by means of Internet. If such a remote control was possible, I could locate the band and enjoy QSO, even though I am away from home.

The CQ Magazine of Japan, October issue, introduced a program called eQSO. I found it could possibly make my dream partially come true. Mr. Okada, JN1KLT, whom we came to know each other through eQSO, told me about FT-847 SuperControl, which was exactly the program I have been longing for. My envisaged plan began to make firm strides towards reality.

FT-847 Super Control was developed in Germany.

Mr. Peter Pfisterer, DH1NGP in Germany started to develop this SuperControl two years ago. This program is intended to controls YAESU FT-847 and FT-100 through the CAT command. Right away I downloaded the program and tried to check its performance by connecting it to YAESU FT-847, but it failed to work properly.

I wrote a mail to Peter, DH1NGP on November 1, 2002 telling him that it did not work properly on Windows Japanese Version. The first response I received from him was as follows:

“Ueno, you are my first contact in Japan, nevertheless so many OMs from Japan visiting my homepage.”

Both of us thought that it should perform well on Japanese Version Windows. We tried to achieve all we expected to do on this program. We exchanged mails and talked on NetMeeting almost every day and finally accomplished the task of remote control of transceiver through Internet. The Remote Control Shack has come into being.

I went to Germany towards last year end and stayed at Mr. Pfisterer's home for a 10 days. In the course of debugging, we attempted contact with Japan. Mr. Sakurai, JF1LZQ in Japan was the only person we were able to get in touch then on 21 MHz, but many wireless stations in Germany came into contact with Pfisterer's transceiver using FT-847 Super Control on 430MHz and 7MHz. When we caught callback from pile up station, we leaped out of sofa in the delight of accomplishment.

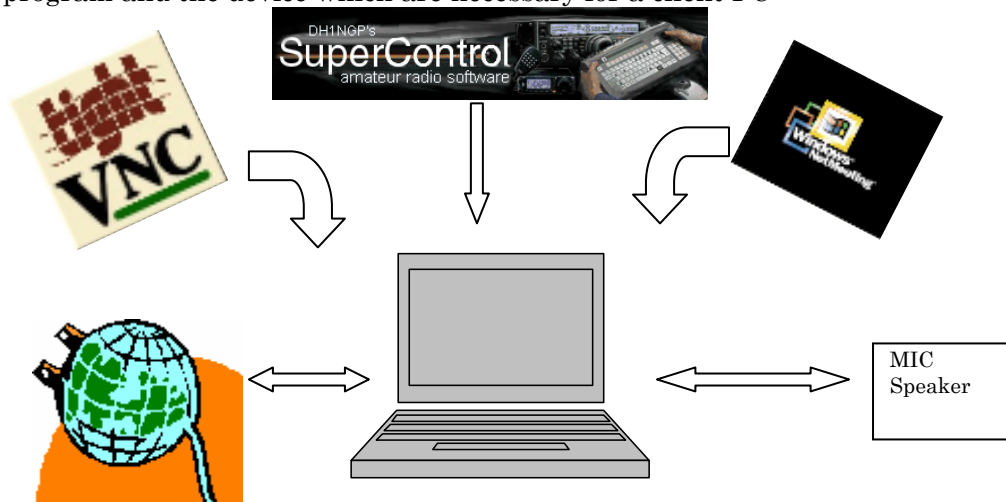
(Note)

Although JARL expressed a view with regard to legitimacy that they could accept remote control of amateur radio station, Communication Government Office indicated infringement with Examination Standard of Amateur Radio Station. Therefore we are under negotiation with Ministry of Public Management, Home Affairs, submitting the application for their formal approval.

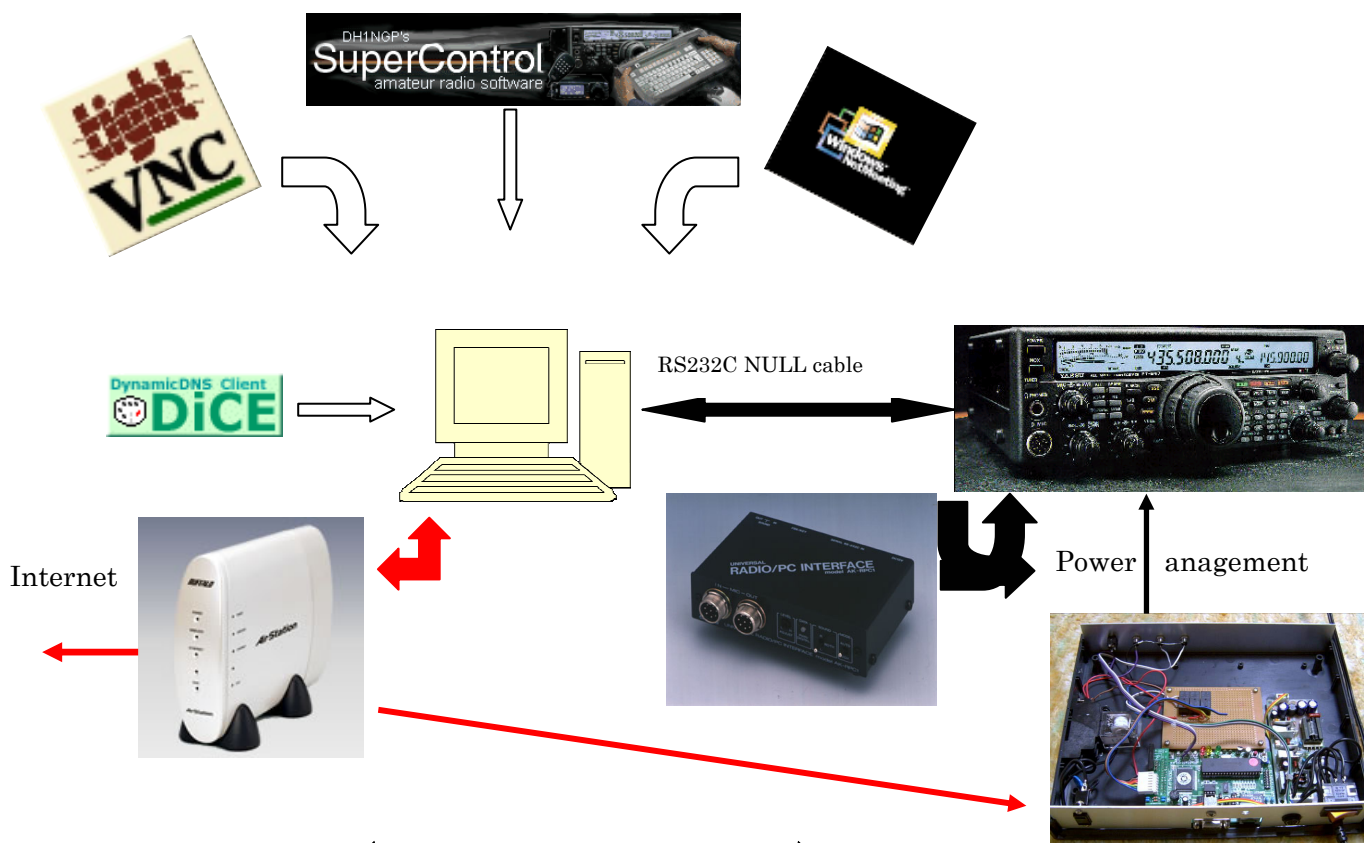
Constructing the Remote Control Shack.

It is regretful for us to say that Remote Control Shack has not yet been well developed to such an extent that it is ready for use, when it is purchased and connected. It can be the latest frontiers of Amateur Wireless, which involves Network technology, Amateur wireless technology and PC knowledge. At the moment it is in the state of game or art, so to say.

program and the device which are necessary for a client PC



Software and the device which are necessary for a Server



System Fabrication (Following items to be fabricated.)

1. ADSL Modem and Router for Internet connection
2. Server Computer
3. Personal Computer for client
4. Interface for Audio signal
5. Power Management Server
6. Transceiver

Necessary Software

- 1 Please install the same version in "a FT-847SuperControl" server and a client controlling transceiver.
2. install the same version in "a NetMeeting" server and a client of Microsoft transmitting a sound and make only the server side setting I "am automatic, and to receive a call".
3. VNC to supervise server
<http://www.realvnc.com/>
4. InternetExplorer for Power Management Server
5. DynamicDNS Service and IP Update Client Program
http://www.hi-ho.ne.jp/yoshihiro_e/dice/
<http://www.technopagan.org/dynamic/>

These soft wares are standard items offered free through Internet or pre-installed in OS,

except the SuperControl which is a shareware. I hereby explain Know-How to you for System Fabrication.

Network Preparation

At the outset we must prepare network. But when it comes to network, it is not easy to explain because its infrastructure is so complicated and of multiple character that there are many options. So, let me explain to you the following three types of connections as examples, (1) DSL, (2) HOME PNA connection, (3) CATV Internet connection. If you are to introduce Remote Control System within your home LAN only, i.e., domestic use only, please ignore the following explanation.

(1) In case of DSL Connection

If your PC was single and independent, it is rather easy. But when you have router for operating two or more PCs at a time, the router needs to be modified so that the program driven by Server can be approached from outside at a distance. (Please see diagram 2.)

アドレス変換テーブルの表示/削除				
削除	WAN側IPアドレス	プロトコル		LAN側IPアドレス
<input type="checkbox"/>	エアステーションのWAN側IPアドレス	TCPポート:1503	←→	192.168.0.2
<input type="checkbox"/>	エアステーションのWAN側IPアドレス	TCPポート:1720	←→	192.168.0.2
<input type="checkbox"/>	エアステーションのWAN側IPアドレス	TCPポート:3000	←→	192.168.0.2
<input type="checkbox"/>	エアステーションのWAN側IPアドレス	TCPポート:5900	←→	192.168.0.2
<input type="checkbox"/>	エアステーションのWAN側IPアドレス	HTTP(TCPポート:80)	←→	192.168.0.200

diagram 2:I can each access two servers in five ports from Internet

Let me explain how to modify the router equipped with MELCO's wireless LAN.

- (a) You need to change IP address from DHCP to FIX address within the Server.
- (b) In so doing, set 1500 and 1720 port to Server to facilitate NetMeeting, set 5900 port to Server to facilitate VPN, set the optional port designated by SuperControl to Server and finally set the port and address in the Power Management Server.

(2) In case of HOME PNA or CATV Internet

When you operate two or more PCs with an assigned global address, router modification is not necessary. However, if router was required by the contract, its modification

needs to be done in accordance with what we have explained in the aforementioned DSL Connection.

Acquisition of Domain and IP Update Client

In order to reach your Server located at home from outside, you ought to have FIX IP address of your Server or router. There is a case, however, that your provider does not offer such services as supplying FIX IP address of Global address. In fact there are still many providers who offer no such services.

There may be a case that many users have averted having FIX address, because it incurs extra charges. You may be aware that a fresh global address will be assigned whenever circuit was shut off for some reasons, or when you switched off your PC or router. We know that many users have acquired domain name these days, but please be advised again that you cannot reach your Server at home from outside, unless you have FIX IP address.

In such circumstances, free Dynamic DNS service has emerged. (Please visit Web for detailed information.) We can make use of free IP Update Client program, by which we are able to locate Server address through domain called “7n4uyf.no-ip.org” .

Note: Domain 7n4uyf.no-ip.org does not do a fact.

Nevertheless we had better avail ourselves of two or more Dynamic DNS services, because there is a possibility that they cease offering free service at their discretion.



IP Update Client Program updates a domain address hourly

Hardware Preparation

(1) Server Preparation

High performance such as high speed CPU or extra large memory is not required. However, Server must be equipped with sound device for the purpose of Netmeeting. The device should be double and its proper performance must be secured. Server must carry one COM port (RS 232C port) in order to control LAN interface and FT-847. Heavy duty Server is not necessary. You can buy rather cheap but adequate Note PC and let it be your Server, so then you can lower the running cost of its 24 hours operation.

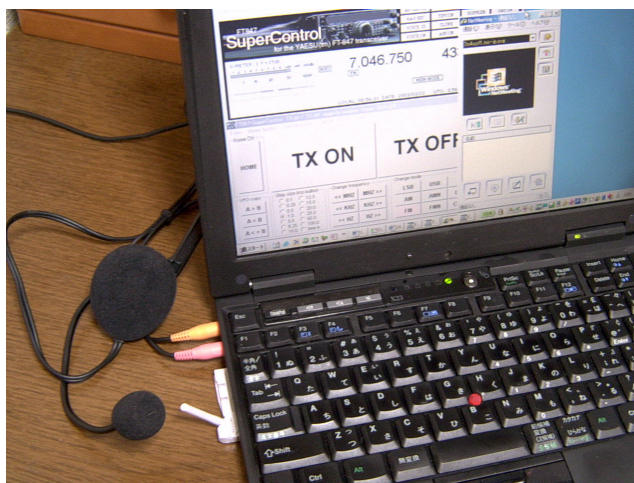
OS you are now in use can serve as Server. Any one of Windows 98, Me, NT2000, XP will do. Needless to say, stability of OS is prerequisite. Therefore, Windows 2000 or XP is preferable. It is mandatory to update Windows, whenever the notice of “critical update” appears on Windows Security Patch.

Next step is to connect COM port on Server to FT-847 by cross cable. In case of COM port on Server PC being occupied, you need to add extra port or switching apparatus. We would like to let you know that SuperControl does not verify stable performance of the conversion cables from USB to COM port.. The verification is at your own risk.

(2) Client's PC

Any kind of PC will do, but it must be equipped with double sound device of normal performance. Clients need to have access device to Internet such as LAN or Cellular Phone. Please prepare a head set or at least a microphone.

I am using Note PC with built-in wireless LAN. When I am at home, I use LAN, and when I am away from home, driving car or on train, I use cellular phone. In neither case I experienced deterioration of sound. (Please see Photo1. ----Client's PC)



(Photo1: If there are a cellular phone and a head set, I become shack anywhere)

Interface of Audio Signal

Receiving signal from FT-847 is input directly from DATA port of transceiver to Server's microphone or LINE terminal. You must set FT-847's menu number 23 as 1200 bps. Regarding signal input from Server to FT847, you can use the interface for SSTV or PSK32. PTT control will be done by SuperControl, so DTR/RTS control using VOX or RS232C is unnecessary. The writer uses ADONIS's RADIO/PC Interface AK-RPC1. In this stage problem may arise. That is RF interference to Microphone line. In my case, there was no trouble on VUHF, but severe RF interference was caused on 7MHz. I tried various measures to cope with this trouble. The most effective measure I found was to separate power circuit of AK-RPC1 from the one of FT-847.

Mr. Okada, JN1KLT, uses level converter of non-power type to get rid of such phenomena. I think this type of converter may serve to secure stable performance.
<http://jn1klt.no-ip.com/>

As I mentioned earlier I uses AK-RPC1. Although it is a little expensive, it frees me from troublesome handling. If you press PTT button on the handy microphone, it cuts off receiving signal from Server. So you can be free of switching over. Be sure to set the switch to VOX all the time, not AUTO. VOX here means to use VOX function of transceiver. We do not have to worry about PTT control, as it is taken care of by SuperControl. Audio signal from Server is received by AK-RPC1 to which speaker is connected. Therefore, you need not bother with switching over. Server is always at your service.



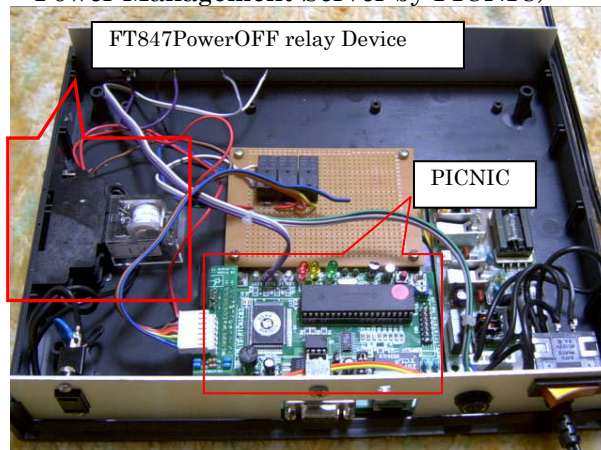
photo2:I put NF-CS09 of noise filter TDK in power supply Line and the microphone output and did RF interference measures

Power Management Server

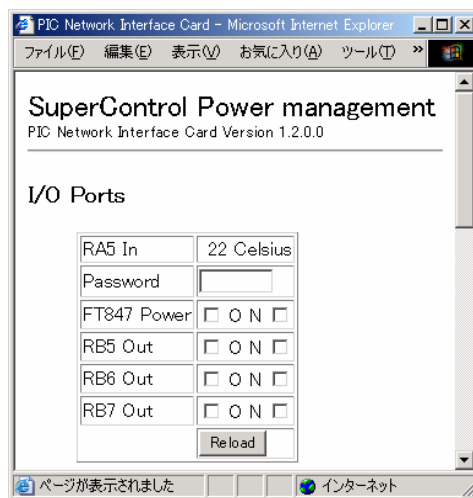
Suppose you are controlling transceiver through your domestic LAN, you are able to stop the wave when Server's OS suddenly hung up or FT-847 is kept on transmitting condition. However, unmanned radio station with a device of remote control needs a fail-safe measure for foreseeable circuit trouble. As it is controlled in mobile situation by Internet using PC &/or Cellular phone, we had better provide precautions measure. AKIZUKI put on sale a product called PICNIC which is a useful Server for such purpose.

It has special IN and OUT terminal. You only connect relay to PICNIC, then it switches off FT-847 or shuts down or restarts Server by itself.

(Please see photo3.---- Power Management Server by PICNIC)



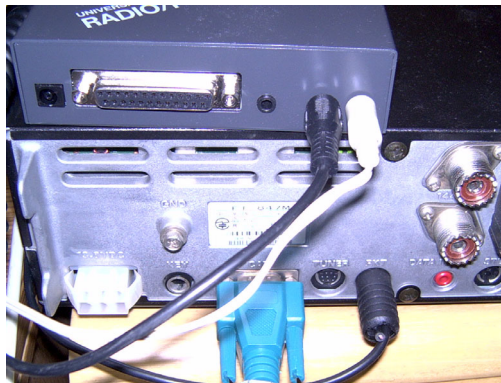
(photo3:ON/OFF of a power supply of transceiver
Power supply ON/OFF of a PC, Reset of a PC are made)



CPU of PICNIC, an assembler program of PIC16F877 renew it.
It is dangerous to connect PICNIC to Internet by no remodeling.
I announce distribution of PIC16F877 which I wrote in a source cord or a program at in WEB of SuperControl

Setting of FT-847

Connect the cross cable RS232C out of Server to CAT terminal. Then set the transmitting speed of Menu 37 as 57600bps. (Please see Photo4.----Rear side of FT-847)



Now, you have completed hardware preparation.

Software Preparation

(1) Install SuperControl

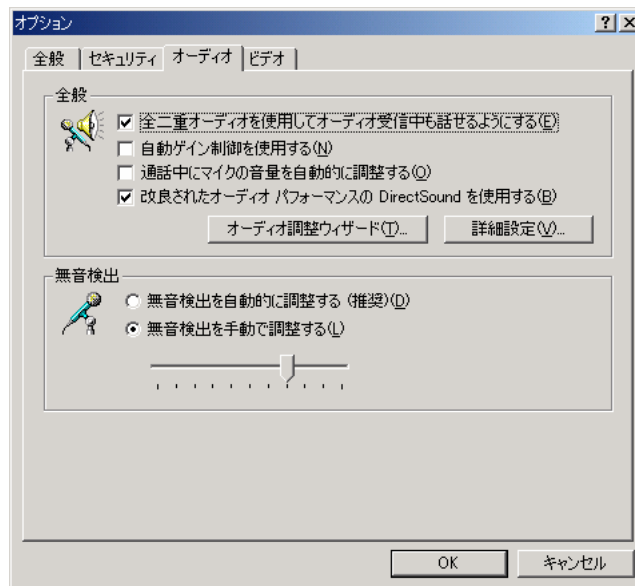
You can download SuperControl from <http://supercontrol.de/>. You need two files, i.e., a brand new full install file (ab't 40 MB) and version up file (ab't 1MB). These files are available in CD ROM. Upon installing it, select "English" on the first menu and proceed. Install the same version both in Server and Client's.

(2) Install Netmeeting

If you use Windows9x or Me, you can download the latest version from Microsoft Download Site.

If Windows 2000, it is preloaded. The latest version is 3.01. We describe the best setting in diagram 10, yet you had better adjust your Server and Client's so as to produce the best sound and to minimize time lag in voice transmisson.

Netmeeting does not automatically receive talking signal at its start. As it is preset that way, we must manually select a command "automatic receive" on the menu.



(3) Install VNC

VNC is a supervisory program watching how Server is working.

As I mentioned earlier, SuperControl was developed by German engineer, Mr. Peter Pfisterer. Peter and I worked together to develop Japanized SuperControl eligible to Windows Japanese Version. As I cannot speak English, I made full use of the translation software, NOVA, issued by Cross Language and talk to each other in English. It is certain that such a real time interpreted chatting was impossible without VNC. In other words, Japanized SuperControl could not be completed in one month time without a valuable assistance of VNC and translation software.

VNC is such a wonderful software of amazing power that you must be very cautious of keeping your Password unrevealed. VNC is free of ownership concept. So, if your IP address or domain was known by a wrongdoer, he will be able to get your Password. It goes that your PC can be taken over at worst. We strongly recommend you to terminate VNC, whenever you finish working with it.

Problem in putting Remote Control Shack in use.

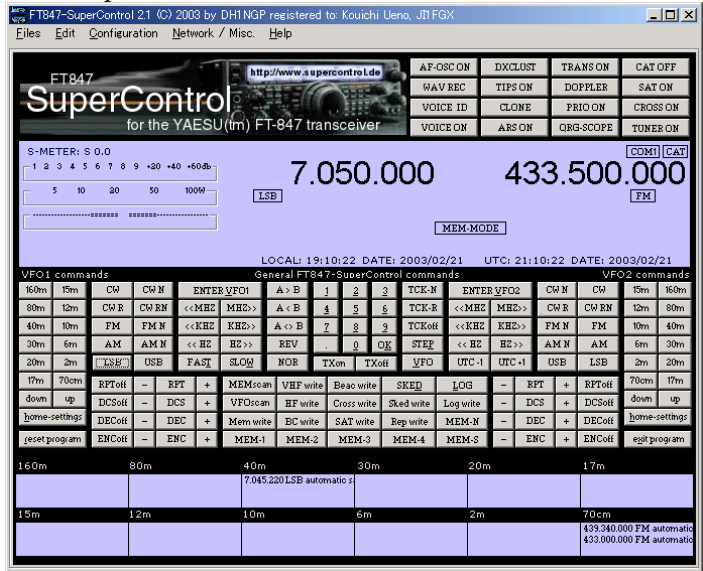
Now, series of above preparations have made your FT-847 ready for remote control of your transceiver via Internet. But there remains one big problem. Examination Standard of Amateur Radio Station provided by Radio Regulatory Law hinders our Remote Control Shack. The Standard contains a stipulation regarding remote control of amateur radio station, saying "Only dedicated line is admitted in-between". The Standard was made before Internet came into existence, so it is partly out of date. We often discussed this matter with Communication Government Office asking them to revise the Standard. We should be happy if you also submit to the Office the application for Alteration of the Standard.

How to use SuperControl

SuperControl was developed to enhance the functions of FT-847 and to support satellite operation of radio station. Mr. Peter Pfisterer, DH1NGP, started working for his own benefit and gradually increased functional phase of this apparatus to meet users' opinions. Accordingly it is true that it has grown into much complicated interface. Today, it is difficult for me to describe all the details of SuperControl, so I recommend you to download it for testing. You can try out all the functions for 30 days without

user registration. Before trying remote control, you had better make sure of various buttons on your Server display. Peter prepared Handling Manual in English and I translated it into Japanese. As it is available in CD ROM and WEB, I hope you would tolerate my awkward translation.

Diagram 8 shows the SuperControl main window.



S meter and Frequency are laid out almost similar to those of FT-847. Look at a group of buttons placed below. They line up symmetrically. You will see them supporting the Satellite Functions of FT-847. These are from left to right, Band Switch, Mode Switch, Frequency UP/DOWN Switch and the central 10 key pad for Frequency manual input. Further you will find a button below for memory setting and memory display.

Please be aware that the right hand group of buttons works only in satellite mode. This functional restriction comes from CAT command of FT-847, not from SuperControl.

(1) May I begin with an Important Note for those who use Japanese Version Windows. Upon starting SuperControl, select “Japanese” in Serialport/Countory and further select COM port you are going to use. This initial operation makes the unit work in accordance with Japanese Version OS. (Please see diagram 9.----Serial port and Selection of Language)

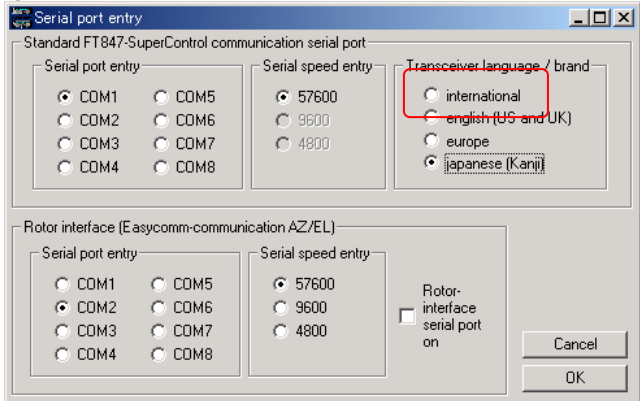


diagram 9.----Serial port and Selection of Language

If you skip to choose “Japanese”, you will encounter the following troubles.

- *Once you press TX button for transmitting mode, you cannot come back to receiving mode by RX button.

- *S meter and PO meter will be frozen.

- *SuperControl hangs up under certain conditions.

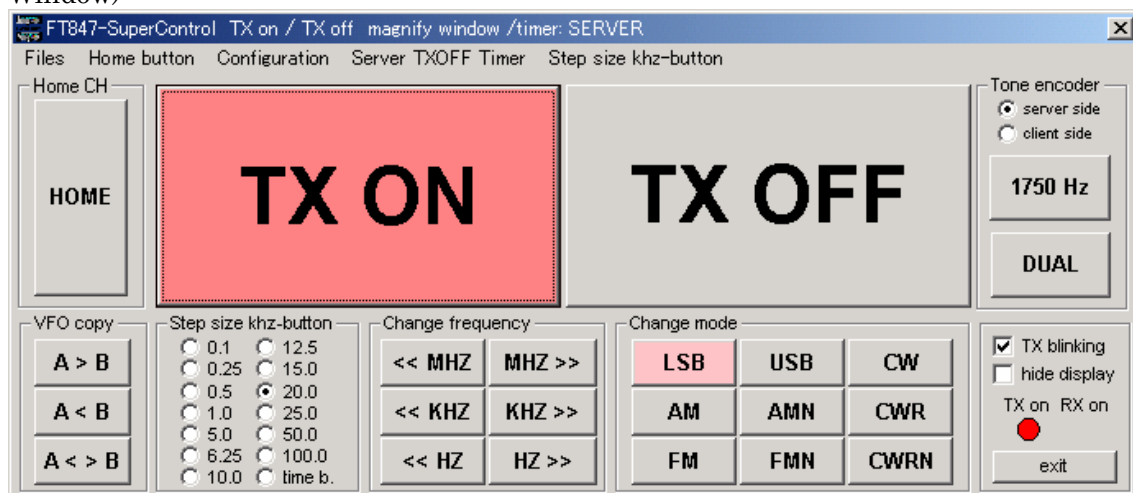
(2) Next is to press CAT button and confirm to see FT-847’s CAT being shown. If not, check whether RS232C cable is correctly connected. Straight cable is an error.

(3) At this stage, all the operations done on FT-847 appear on SuperControl window, such as VFO dialing, Mode switching, etc.

(4) As you press band switch or Frequency buttons on SuperControl, expressions on FT-847 window synchronize.

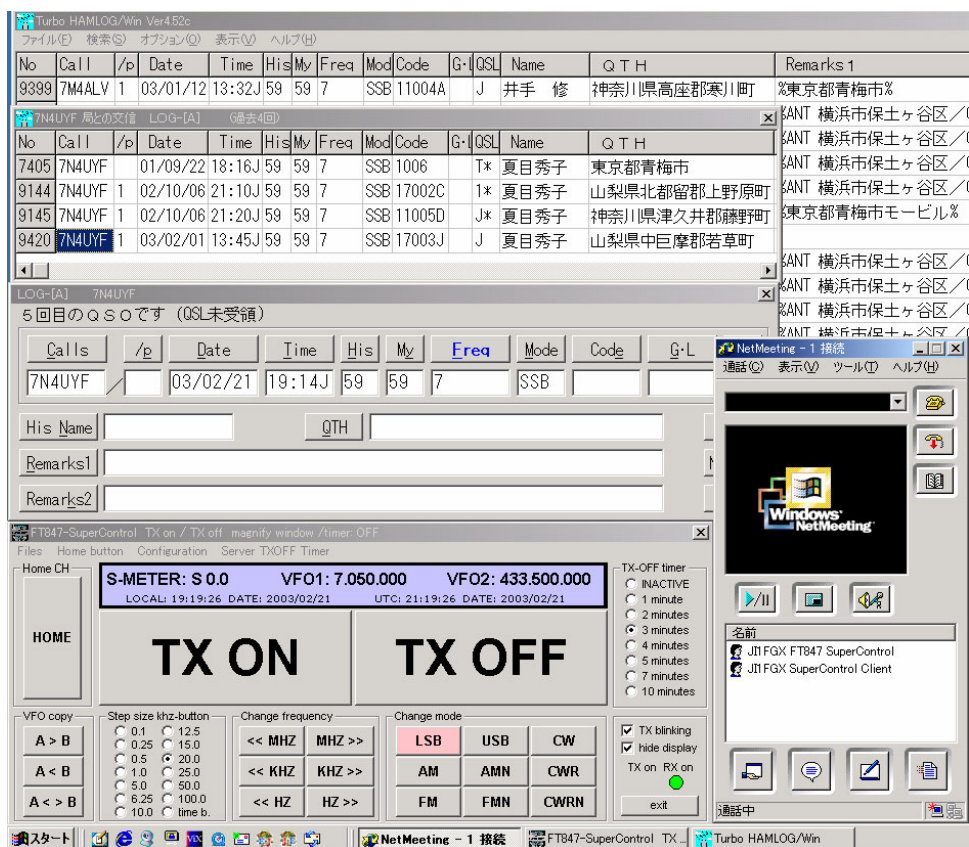
(5) Some of you may think that TX and RX buttons are too small. Yes, I felt the same and complained to Peter in Germany. I was surprised at his quick response.

He sent me a fresh improvement next day. You just press RX button., then a large button will appear. Press TX button on main window, then again a large button come up in transmitting mode. (Please see diagram 10.---- TX/RX Control Window)



(diagram 10.---- TX/RX Control Window)

(6) I sent another annoyance to Peter that SuperControl main window occupied whole space of my display and prevented me from performing other operation, such as Hamlog. Next day he added a new check box, by which SuperControl window disappeared except minimum information such as Frequency, transmitting/receiving switch over, etc. (Please see diagram 11.----coexisting Locking program)

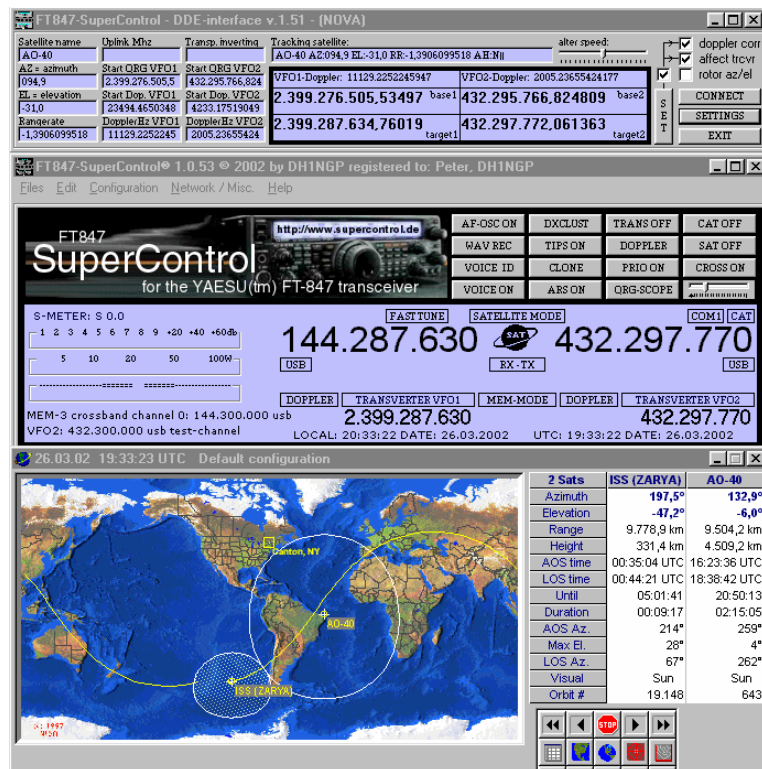


(diagram 11.----coexisting Locking program)

(7) SuperControl is given some other functions.

Doppler calculation for Satellite communication, collaboration with Rotater control program, display of DX cluster, Band scanning, Band scoping, Voice ID and Frequency display of tranverter. SuperControl can manage larger memory operation than the one of FT-847.

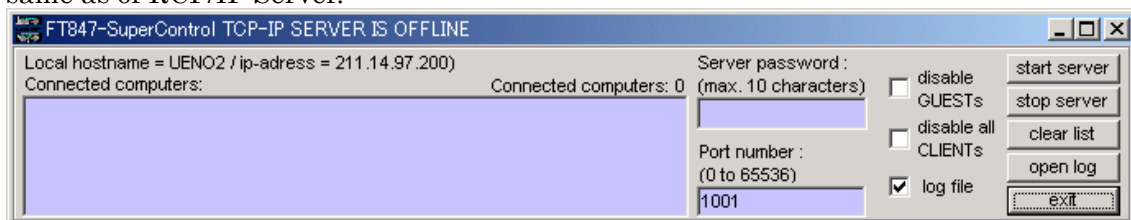
(Please see diagram 12.----If DDE interface was attached, SuperControl can alter Frequency by receiving data from Satellite program)



(diagram 12.----If DDE interface was attached, SuperControl can alter Frequency by receiving data from Satellite program)

Let us begin with Remote Control Shack.

Diagram 13 is a start menu of TCP/IP. Select Network/misc on the main window and input your Password and Port number. If you are in use of the router I explained in the very beginning of this manual, please make sure of Port number on router being the same as of RCP/IP Server.



*If you want to keep record as Log file, check it.

*When user's Pass Word does not comply with, you have to decide whether you admit him or not by pressing ON/OFF button on Guest Check Box. Guest users are barred by seclusion device which make them unable to press TX button. They can come in as SWL users.

Having completed the above preparatory steps, you are ready to start. Press StartServer Button.

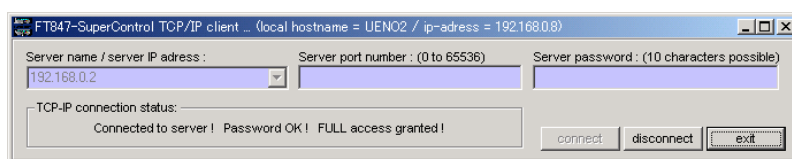
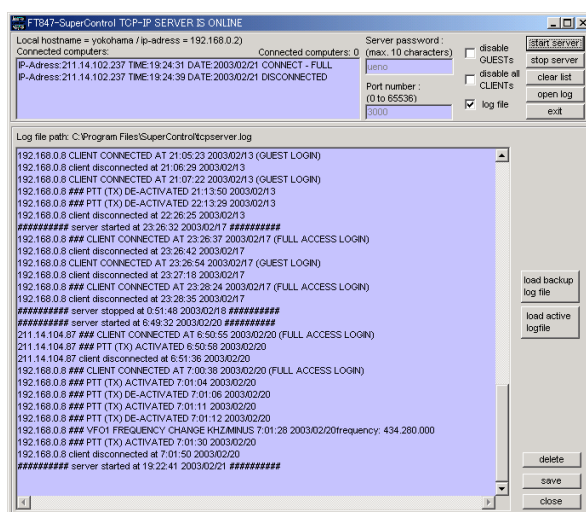


Diagram 14 is TCP/IP Client's Menu.

When you use domestic LAN, you can input IP address directly. But when you are trying to reach your station via Internet, you must input your registered domain name that you have with DynamicDNS.

With regard to NetMeeting, input and connect likewise and confirm if voice communication is secured. Sometimes trouble can happen such as voice from Server is alive, but outgoing voice from this side is dead. You must look into the router first whether it is erroneously set. In case of Windows XP being used, there is a possibility that FireWall ON/OFF setting in LAN Interface is kept on the side of "ON".

Diagram 15 shows the connection record of TCP/IP Server. We strongly recommend you to change your Password and Port number periodically in order to guard against wrongful access.



I can leave detailed records such as connection or a command
I detect cutting of a line of a client and stop the transmission of a message
I satisfy all the demands of amateur radio communications station examination
standard of a RADIO government office

Photo5 demonstrates actual window. What you are doing on diagram 20/21 is almost equal to Internet Chatting. Don't you feel like you are chatting? The fact is that there exists Internet behind what you are hearing and thence we foresee the vast frontiers of Amateur Radio to be pushed farther outward as time goes on.

This system is perfectly functioning in my house. Either through LAN or Cellular phone, nobody has ever noticed conversation presently going on is carried out by means of Remote Control Shack, unless I disclose so. SSB on 7MHz is just normal and same as of usual CQ. But there was one exception. This gentleman was operating full scale unit in FM mode and pointed out that incoming voice seemed to be digitalized.

I say to you, however, that PTT handling is slightly delayed because voice transmission have time lag of 0.5 second. So, it takes some experience for you to get in touch with pile-up stations.



(Photo5 7n4uyf uses internal organs wireless LAN of ThinkPad and does ONAIR at 7MHz from a living room and deals with pile.)

Future Development

We are expecting to complete Japanised SuperControl matching to FT-100 towards the end of April.

After that we further plan to develop FT-1000 MP-MARK-V SuperControl. I have already sent out hardware of MARL-V to Mr. Peter Pfisterer, DH1NGP, in Germany. We are to explore the possibility of the most powerful Remote Control Shack. I hope you would look forward to our new gear.

We enumerate URL for your reference.

- (1) Super Control, Japanese Version ----- <http://supercontrol.hk.tc/>
- (2) SuperControl, Original Version in English ----- <http://www.supercontrol.de/>
- (3) VNC to keep an eye on Server -----
<http://www.tightvnc.com/> [Http://www.realvnc.com/](http://www.realvnc.com/)
- (4) Power Management Server ----- <http://www.tristate.ne.jp/picnic-e.htm>
- (5) DynamicDNS Service and IP Update Client -----
http://www.hi-ho.ne.jp/yoshihiro_e/dice/
<http://www.technopagan.org/dynamic/>
- (6) Audio Interface, JN1KLT Okada ----- <http://jn1klt.no-ip.com/>
- (7) Translation Software ----- <http://www.crosslanguage.co.jp/>

Inquiry and License Booking

Japanese Version ----- ji1fgx@supercontrol.de

German and English Version ----- dh1ngp@supercontrol.de

It is shareware license one of them \$ 75.

I can install it in a computer to 3 with one license.

Acknowledgements

The writer would particularly like to thank the following for their advice and assistance in the compilation of this manual. My colleague, Mr. Akira Suzuki, 7K3USX, Mr. Masuda, JR9POO and Mrs. Stefanie Masuda who kindly spared me time in test transmission from Germany. A special thanks to my fiancée(7N4UYF) who attended the test transmission in spite of my leaving her alone in Japan last Christmas Season.