

5. PC software and Communication configuration

5.1 Observer I & Observer II PC software guide

This is simple guide for PC software. Please refer more details to the software user manual in the HELP of PC software itself.

Observer I & II are the PC software used for the recorder.

Observer I contains two components



Observer II contains three components



CONFIG_VIEWER is for configuration of the recorder from PC.

HIST_VIEWER is for monitoring historical trends in PC.

REAL TIME_VIEWER is for real time data logging in PC.

Observer I is supplied along with the recorder at free of cost.

Observer II is supplied on additional charge for real time data logging applications through PC.

System requirements

Hardware

PC with Minimum 200 MHz processor, 64 MB RAM

100 MB free space in the hard disk.

RS 232 serial port/ Network adopter RJ 45 female/ USB port and CF reader

Software

Operating system: Windows 98, Windows ME, Windows XP, Windows NT, Windows 2000 & VISTA.

Install Observer Software

Run the setup exe available at CD supplied and follow on screen instructions. At any point of time only one either observer I or observer II will exist in any PC. If user install new version of observer software, old version will be deleted automatically during installation of software.



Config_Viewer



Hist_Viewer



RealTime_Viewer

Uninstall Observer Software

This is to remove Observer software from PC. Observer I or Observer II may be uninstalled from PC any time from the following two ways

Control panel- Add/remove programs-observer I/observer II

Start –Programs-Observer I / Observer II / Uninstall

CONFIG_VIEWER



Config_Viewer

This is used for configuration of the recorder from PC.

Start-Programs-Observer I / Observer II-Configuration

Tool bar



To open new project



To open existing project file



To save the project file settings in PC



To delete the project file from PC



To select bank (CF card/ Ethernet / RS 232)



To select the channel (AI/AO/DI/DO/MATH)



To select display



To select tools (Timer/Counter/ Totalizer)



To select instrument details



To select system information (Type of cards available at slots, system version info)



Clock summer settings



To set password

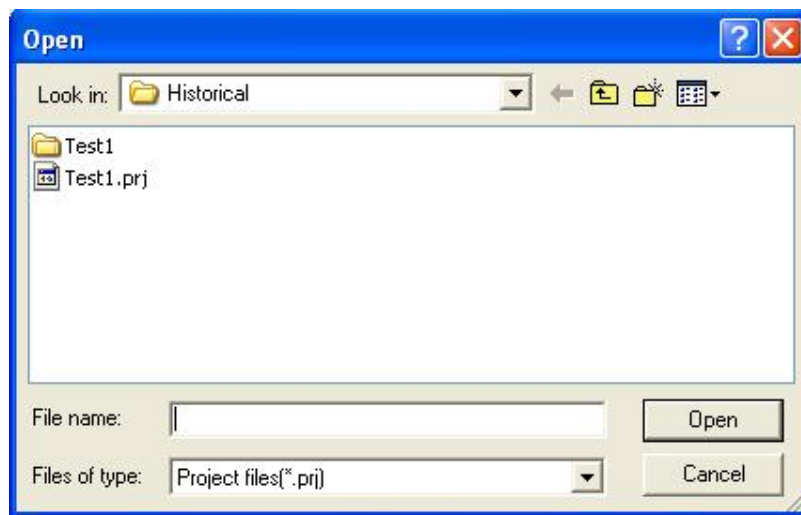


Receive configuration (CF reader/RS 232/Ethernet)



Send configuration (CF card/RS 232/Ethernet)

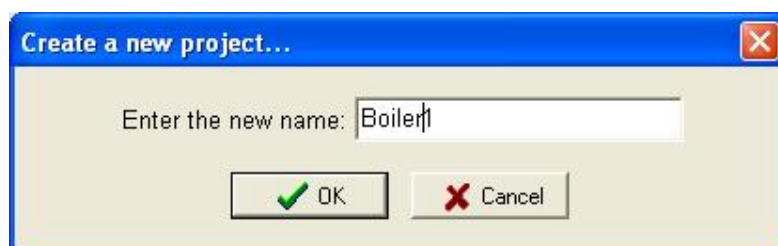
If Observer software is already configured in the PC, then you can select *.prj file to open the project.



For the first time configuration you can cancel the above window and select new project



Enter the name of the project.

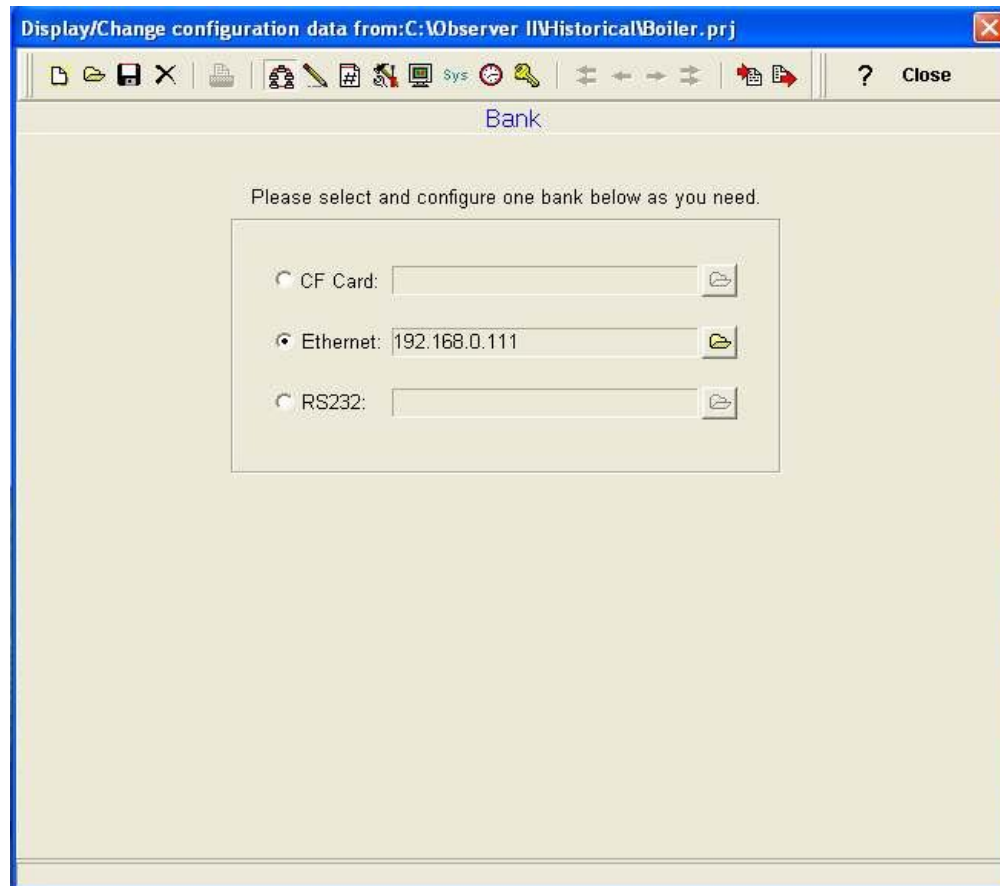


Bank

This is used to select physical connection between the recorder and PC.

Three options are available

1. CF card
2. Ethernet
3. RS 232



1GB CF card shall be supplied along with the recorder. Standard Ethernet port (RJ 45 female) shall be available at the recorder. RS 232/ RS485 shall be supplied as additional options.

5.2 Ethernet Configuration

It is possible to use PC software Observer II for data logging from multiple units of recorders connected on standard Ethernet. Total number of devices that can be connected depends on the hardware interface selected for the application. For example, 255 hardware devices can be connected on Ethernet. Maximum 1024 tags can be configured at Observer II for data logging, archiving and analysis. The tags cover AI, Math, DI, DO, Counter & Totalizer.

1. Make sure that network adapter in PC is properly configured. IP address, Subnet mask and Gateway should be configured at the PC for using Observer II program. Please contact System administrator to set Unique IP address for the PC.
2. Install Observer II application software in PC. The software may be installed from setup available in the CD supplied as per the order.
3. Ethernet configuration at Recorder

Please refer to **4.4 Instrument** entering IP address, subnet mask and gateway address manually at the recorder.

Gateway refers to a device on a network that sends local area traffic to other networks.

Subnet mask numbers help to define the relationship between host and rest of the network.

For every LAN, the Network administrator shall define Subnet mask and Gateway. Obtain subnet mask and gateway address for the LAN at the place where the recorder to be connected. Enter these details at the Recorder manually using front buttons.

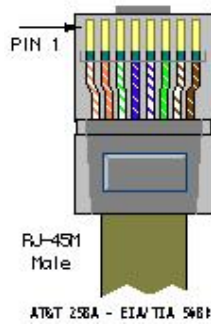
By default, subnet mask address: 255.255.255.0

By default, Gate way: 0.0.0.0

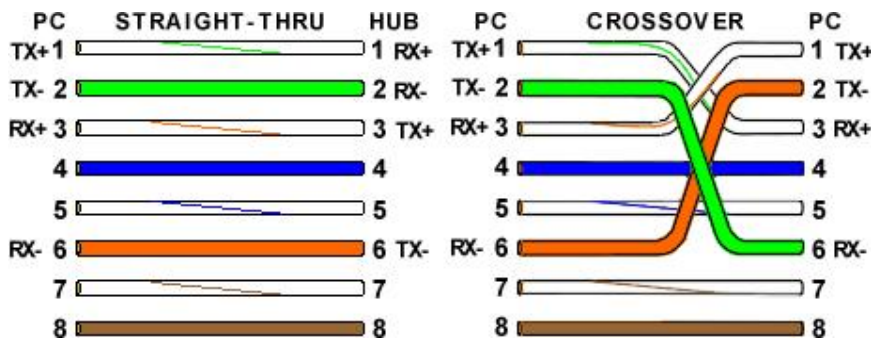
Allocate the Unique IP address to the recorder and enter IP address at the recorder manually. Contact System administrator for obtaining free IP address available at user LAN. Naming duplicate IP address may disable the communication between the recorder and PC/LAN HUB.

4. Local area network uses UTP cable for Ethernet connectivity. Maximum UTP cable distance between the recorder and LAN/HUB/PC should be less than 100 Meters. If the distance is more than 100 Meters, additional LAN accessories/equipments may be required for increasing signal strength. Please contact network administrator for more information on extending LAN.
5. Two different types of cables shall be used for connecting the recorder on Ethernet as follows. For connecting the recorder to LAN HUB, then standard straight-through Ethernet cable should be used. For connecting the recorder to PC/Notebook directly, then crossover Ethernet cable should be used.

Straight Through Cable VR18-LAN/HUB	
RJ-45 PIN	RJ-45 PIN
1 Tx+	1 Rc+
2 Tx-	2 Rc-
3 Rc+	3 Tx+
6 Rc-	6 Tx-



Crossover Cable VR18-PC/Notebook	
RJ-45 PIN	RJ-45 PIN
1 Rx+	3 Tx+
2 Rc-	6 Tx-
3 Tx+	1 Rc+
6 Tx-	2 Rc-



- Connect proper UTP Ethernet cable as per the requirements and observe the communication status between the Recorder and PC/LAN HUB at the LED's dedicated for the purpose near female RJ 45 connectors.

Recorder side

Link (Green LED)

Green lit: Cable connected between the recorder and PC/LAN HUB

Green Off: No Link between the recorder and PC/LAN HUB

Tx/Rx


Orange Lit continuous: No cable connection

Orange slow blink: Communication established between recorder & PC/LAN HUB

- If the communication between the recorder and PC/LAN HUB is successful, then start Observer II in the PC as follows

Start-Programs-Observer II – Configuration

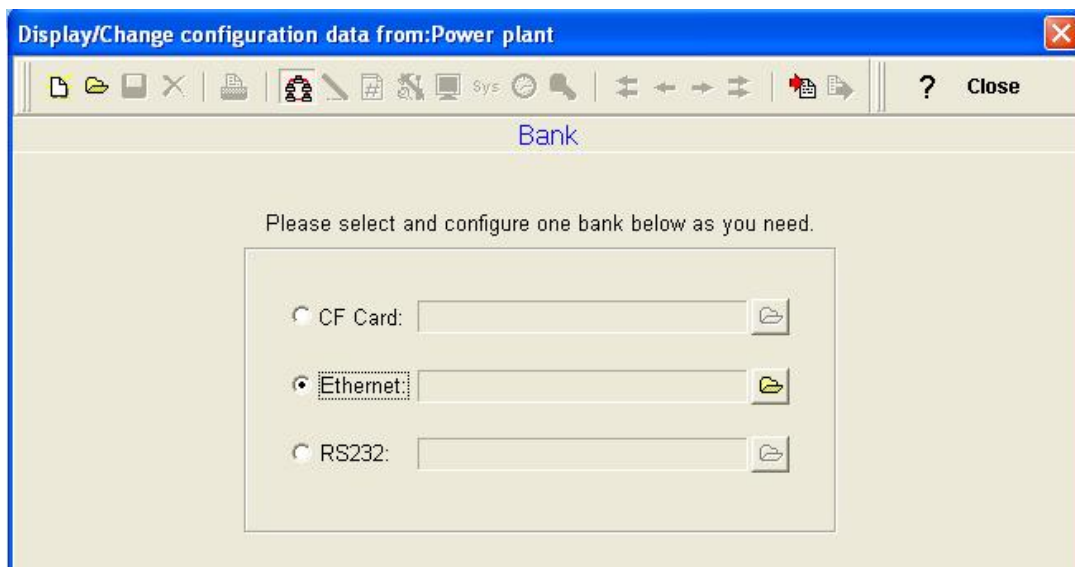
For the first time, Under Historical folder .prj file shall not be available.


Open new file 

Enter new name for the project, Ex: Boiler

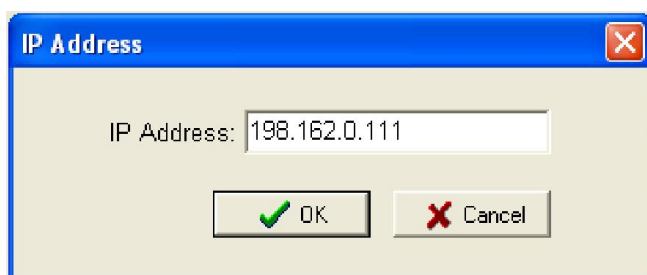


Select Ethernet in the Bank by using radial button



Open for Ethernet connection 

Enter the IP address of the Recorder



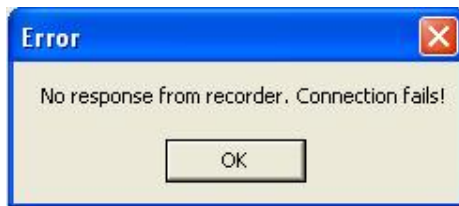
System will ask “Do you want to receive configuration data now? (Y/N)”

Click on “Yes” to upload the recorder configurations to PC.

If Upload is successful, it shows message as “Configuration successful” and all the configuration settings of the recorder now available at PC. The information includes all channel details of Input/Output cards as per Jumper/switch settings.



If Upload is unsuccessful, it shown message as “No response from Recorder, connection fails”.

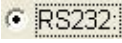



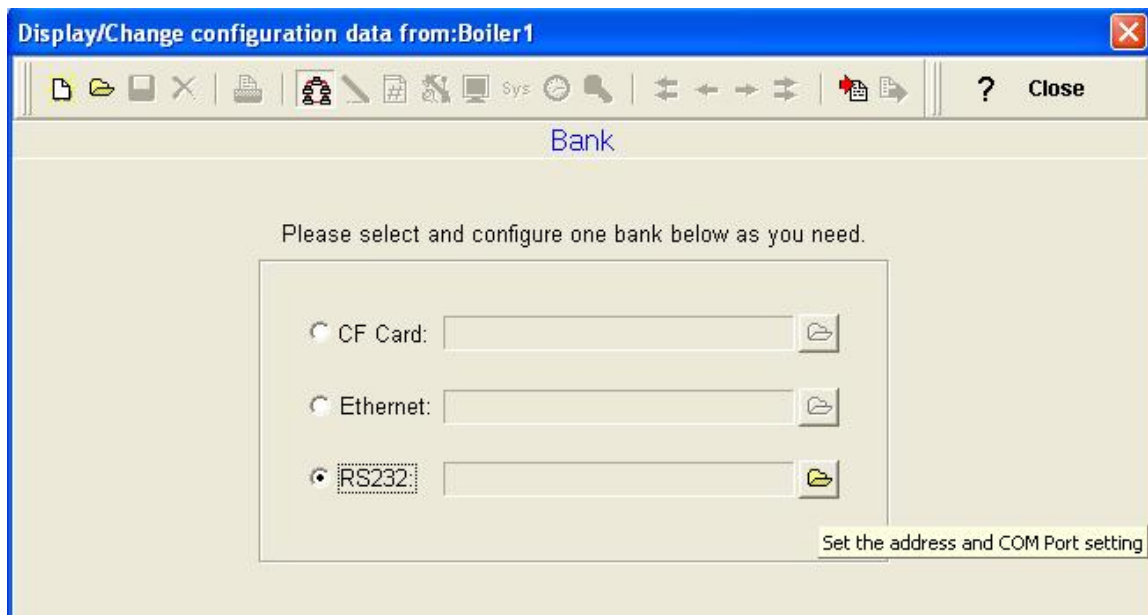
If this is the case, please check the Ethernet cable connections at both the recorder and PC/LAN HUB side. Also make sure that green communication LED available for proper firm connection at RJ 45 connector.

If still communication is not established between the recorder & PC, then once again check Subnet mask and gateway address at the recorder & PC. Contact Network/ System administrator for proper Ethernet configuration of the recorder & PC. Please note that recorder should have unique IP address in the network and PC being used for Observer II shall have separated Unique IP address in the network.

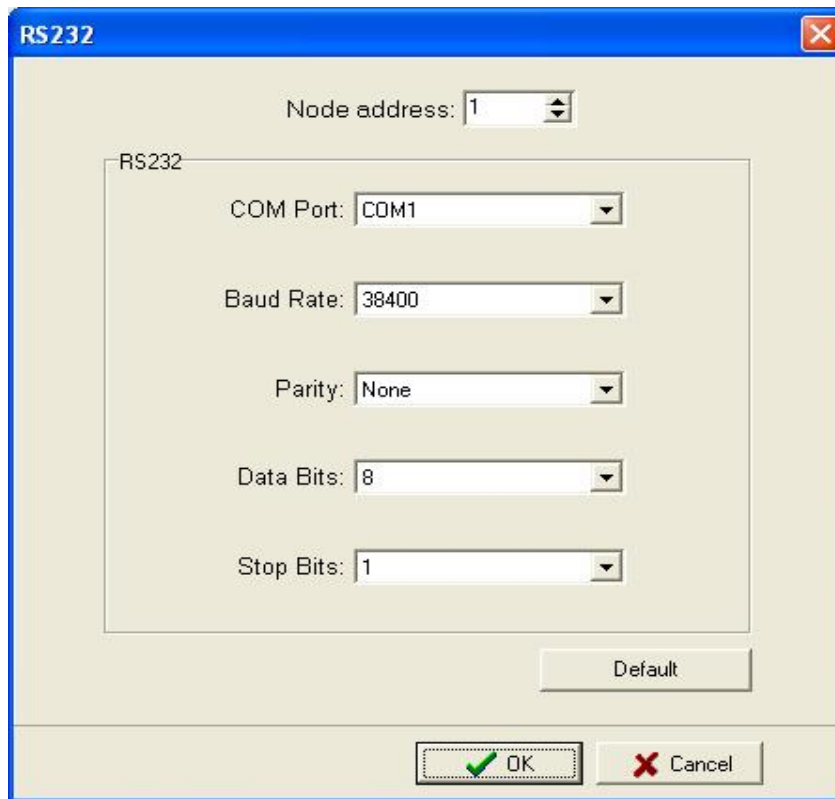
5.3 RS 232, RS485, RS422 Configuration

It is possible to use PC software Observer II for data logging from multiple VR18 recorders connected on network RS 485. Total number of devices that can be connected depends on the hardware interface selected for the application. For example, 247 hardware devices can be configured on RS 485. Maximum 1024 tags can be configured at Observer software for data logging, archiving and analysis. The tags cover AI, Math, DI, DO, Counter & Totalizer.

1. Make sure that RS 232 port is available at recorder. Normally it will be D9 male.
2. Also make sure that RS 232 port available at PC where observer software is installed.
3. Please refer to **2.5 RS 232/RS 485/ RS 422 wiring** in details.
4. Set RS 232 communication settings at the recorder manually. Please refer to **4.4 Instrument** and select RS 232 at PC transfer. Set RS 232 communication details manually at the recorder. Please note that press Back Key to save the changes at the recorder. Switch off the recorder power supply, then switch on once again and make sure that RS 232 communication details are properly saved in the recorder.
5. Connect RS 232 cable between the recorder and PC. Please refer to **2.5 RS-232 wiring** details.
6. Select RS 232 in the bank as below through radial button 
7. Click on  for RS 232 communication settings.

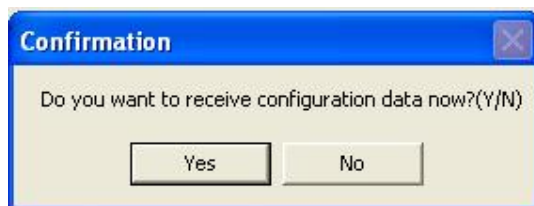


8. Set communication parameters for RS 232 communication at PC.



The image shows a Windows-style dialog box titled "RS232". It contains several configuration fields: "Node address" with a value of 1, "COM Port" set to COM1, "Baud Rate" set to 38400, "Parity" set to None, "Data Bits" set to 8, and "Stop Bits" set to 1. Each field is a dropdown menu. Below these fields is a "Default" button. At the bottom of the dialog are "OK" and "Cancel" buttons, with a green checkmark icon next to the OK button.

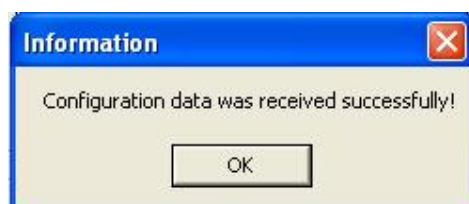
9. Click on OK after setting all above details. By default Node address is 1. If any change is there for the node address, then it should be set at recorder manually then enter the same node address in the above configuration.



The image shows a small dialog box titled "Confirmation". It contains the text "Do you want to receive configuration data now?(Y/N)". Below the text are two buttons: "Yes" and "No".

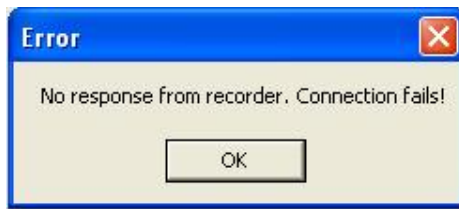
10. Click on "Yes" to upload the recorder configurations to PC.

11. If Upload is successful, it shows message as "Configuration successful" and all the configuration settings of VR18 recorder now available at PC. The information includes all channel details of Input/Output cards as per Jumper/switch settings.



The image shows a small dialog box titled "Information". It contains the text "Configuration data was received successfully!". Below the text is a single "OK" button.

If Upload is not success, it shown message as “No response from Recorder, connection fails”.



If this is the case, please check the RS 232 cable connections at both the recorder and PC. Also make sure that green communication LED available for proper firm connection at back RS 232 port available at recorder back side.

If still communication is not established between the recorder & PC, then once again check Node address at the recorder. If more than one recorder is connected in RS 485/ RS 422 network, make sure that all the devices have unique address. Check the communication settings at the individual recorders manually.

If the converter SNA 10A is used for converting RS 485/ RS 422 to RS 232, then make sure that Dip-switches are correctly set for the communication details.

If RS 485/ RS 422 is used for connecting recorders, then make sure that last node is less than 1000 meters from the PC. Also make sure that STP cable is being used for RS 485 connections.

In some computers, COM 1 and COM 2 have been used for other devices. So it is required to carefully check whether RS 232 cable is connected to proper communication port of PC or not.

It is important to check COM port of PC to see whether it been properly set.

My computer-Properties-Hardware-Device Manager – Ports – COM 1 – Properties



Device usage: It should be enabled

Device status: The device is working properly.

If above conditions are not met, then RS 232 port is having problem at PC. Contact system administrator for replacing the port or updating driver properly.

If still communication is not established, user can try setting up observer software in another PC where COM port is healthy.




Make sure that RS 232 communication setting at the recorder and PC are equal.

5.4 CF card Configuration

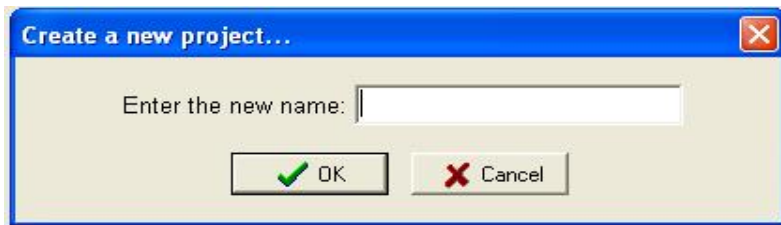
1. Standard 1GB CF card shall be supplied along with the recorder.
2. Save configurations from recorder to CF card at Recorder.
Configuration – Save.
This step will make sure that all IO cards information as per jumper and Dip-switch selection will be saved in to the CF card.
3. Use CF reader to read the recorder configuration on CF card in Observer software. Normally CF readers are available for use at USB port.

Please note that all standard CF readers from major vendors will be detected automatically as mass storage devices by the Win XP operating system. If you are using any other operating system like Windows 98, windows ME, Windows NT and Windows 2000, then mass storage device may not be detected and you have to install the driver for the CF reader. Driver CD shall be shipped along with Observer software for configuration of CF card at PC. Please note that, you need to configure CF card driver only if operating system not detecting mass storage device.

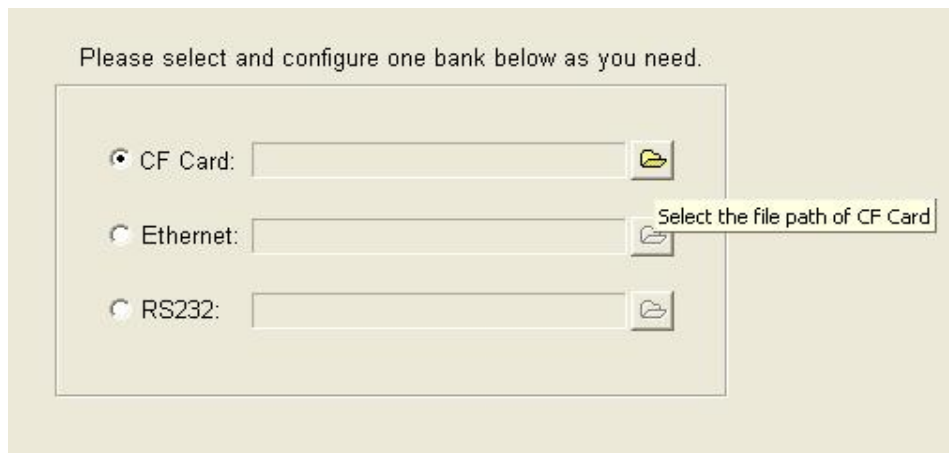
4. Once CF reader along with CF card are detected by the PC, then it should appear as removable drive at the computer.
5. Start Observer program, Ex: Start-Programs-Observer 1 - Configuration


Open new file 

Enter new name for the project, Ex: Boiler



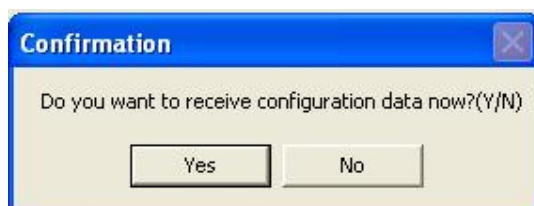
6. Select CF card using radial button



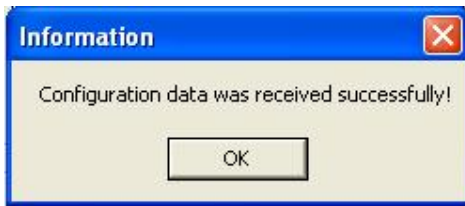
7. Click on  to set CF path to receive the configuration data available in CF card.



8. Click on Yes to receive the configuration data from CF card to PC.

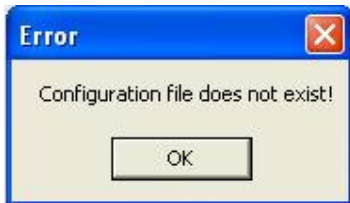


9. If Upload is successful, it shows message as “Configuration successful” and all the configuration settings of the recorder now available at PC. The information includes all channel details of Input/Output cards as per Jumper/switch settings.



10. If Upload is unsuccessful, it shown error message as “Configuration file does not exist”. This message indicates that configuration information is not available in the CF card. Check correct path of CF card is selected.

If still problem exists, check the files available in the CF card at PC. At least 2 files by name IO and RECORDER should be available. If the files are not available, then recorder configuration data is not properly saved in the CF card. Repeat it from Step 2.



5.5 Configuration in Real-Time Viewer



Configuration data

It is used to define the configuration of the recorder for Real-Time Viewer. Please note that the configuration of Real-Time Viewer can be redefined and independent to the configuration of recorder itself.

Display/Change configuration data from: C:\Observer II\RealtimeWln.prj

Close

Add Modify Delete

Tag Name	Bank	Node/IP	Tag Type	Device Type	Addr...	EngHi	EngLo	Unit	Deci...	Alarm1	SP1
AI1	1	192.168.0.111	VR18	Channel1		4553.6	-199...	°C	1	Hi	24.0
AI2	1	192.168.0.111	VR18	Channel2		4553.6	-199...	°C	1	No	
AI3	1	192.168.0.111	VR18	Channel3		4553.6	-199...	°C	1	No	
DI1	1	192.168.0.111	VR18	DI1		65535	0		0	No	
DI2	1	192.168.0.111	VR18	DI2		65535	0		0	No	
DI3	1	192.168.0.111	VR18	DI3		65535	0		0	No	
DI4	1	192.168.0.111	VR18	DI4		65535	0		0	No	
DI5	1	192.168.0.111	VR18	DI5		65535	0		0	No	
DI6	1	192.168.0.111	VR18	DI6		65535	0		0	No	
DO1	1	192.168.0.111	VR18	DO1		65535	0		0	No	
DO2	1	192.168.0.111	VR18	DO2		65535	0		0	No	
DO3	1	192.168.0.111	VR18	DO3		65535	0		0	No	
DO4	1	192.168.0.111	VR18	DO4		65535	0		0	No	
DO5	1	192.168.0.111	VR18	DO5		65535	0		0	No	
DO6	1	192.168.0.111	VR18	DO6		65535	0		0	No	
Cont1	1	192.168.0.111	VR18	Counter1		65535	0		0	No	
Cont2	1	192.168.0.111	VR18	Counter2		65535	0		0	No	
Cont3	1	192.168.0.111	VR18	Counter3		65535	0		0	No	
Cont4	1	192.168.0.111	VR18	Counter4		65535	0		0	No	
Cont5	1	192.168.0.111	VR18	Counter5		65535	0		0	No	
Cont6	1	192.168.0.111	VR18	Counter6		65535	0		0	No	
Tolz1	1	192.168.0.111	VR18	Totalizer1		4294...	0.0		1	No	
Tolz2	1	192.168.0.111	VR18	Totalizer2		4294...	0.0		1	No	
Tolz3	1	192.168.0.111	VR18	Totalizer3		4294...	0.0		1	No	
Tolz4	1	192.168.0.111	VR18	Totalizer4		4294...	0.0		1	No	
Tolz5	1	192.168.0.111	VR18	Totalizer5		4294...	0.0		1	No	
Tolz6	1	192.168.0.111	VR18	Totalizer6		4294...	0.0		1	No	

1 items selected

Double click on channel in the above spreadsheet to show the following Modify tag data with email configuration. If auto-update option is selected in modify tag data as shown in following screen, then all the settings done at the channel for events will appear here. If it is not selected, then user can configure manually for different set points in order to generating alarm emails.

Modify tag data

☒ Auto-update

Tag Type: DEMO Tag Name: AI1

Bank: 1 Device Type: Channel1

Protocol: Modbus_TCP LogSpeed: 1 S

IP Address: 192.168.0.111 LogMethod: Instant

Alarm	Type	Setpoint	Job
1	Hi	24.0	Send Email
2	HiHi	26.0	Send Email
3	No		No Action
4	No		No Action

Engineering

High: 4553.6 Unit: °C

Low: -1999.9 Decimal: 1

OK Cancel

Select Send email option for the job as shown above.

The Email on event will be received like this,

Type:HiAlarm
Source:AI1
ActiveTime:12/12/20059:49:59AM
Value:23.8



Option Three options of Share, Email and Communication are to be defined. It is mainly to set email configuration and real time log speed.

Option

Share Email Communication

Please fill in the blanks so the email function can be activated.

SMTP Server

Host: company.com

Port: 25

User: Henry

Address

From: sales@company.com

To: service@company.com

service@company.com

OK Cancel

Share: Share/do not share options are available for user selection. If share option is selected, then Observer data available in the computer can be shared from other computers. On selection of this share data, shared folder will be created in C:\Observer.

For example, you have one recorder and wish to analyze historical data at different computer. While opening project in the second computer, directly link to the project file available under C:\Observer through network configuration. This will minimize the data transfer between recorder and the computers and make it more efficient by using available resources through network configurations.

Email: The default Port number 25 is used to send email from STMP server. If your network administrator configured different port in your LAN for accessing internet/email, then you have to modify the port number accordingly.

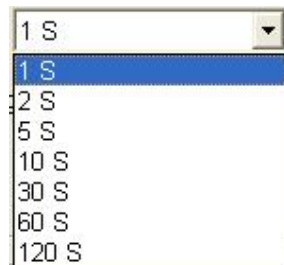
To send an email for any event, the procedure is as follows.

Set SMTP server details as below. Please contact system or network administrator for the server details if your computer is connected in LAN.

Host, Port, User name, From: Sender email address

To: Receiver email address (Max.10 email addresses can be selected)

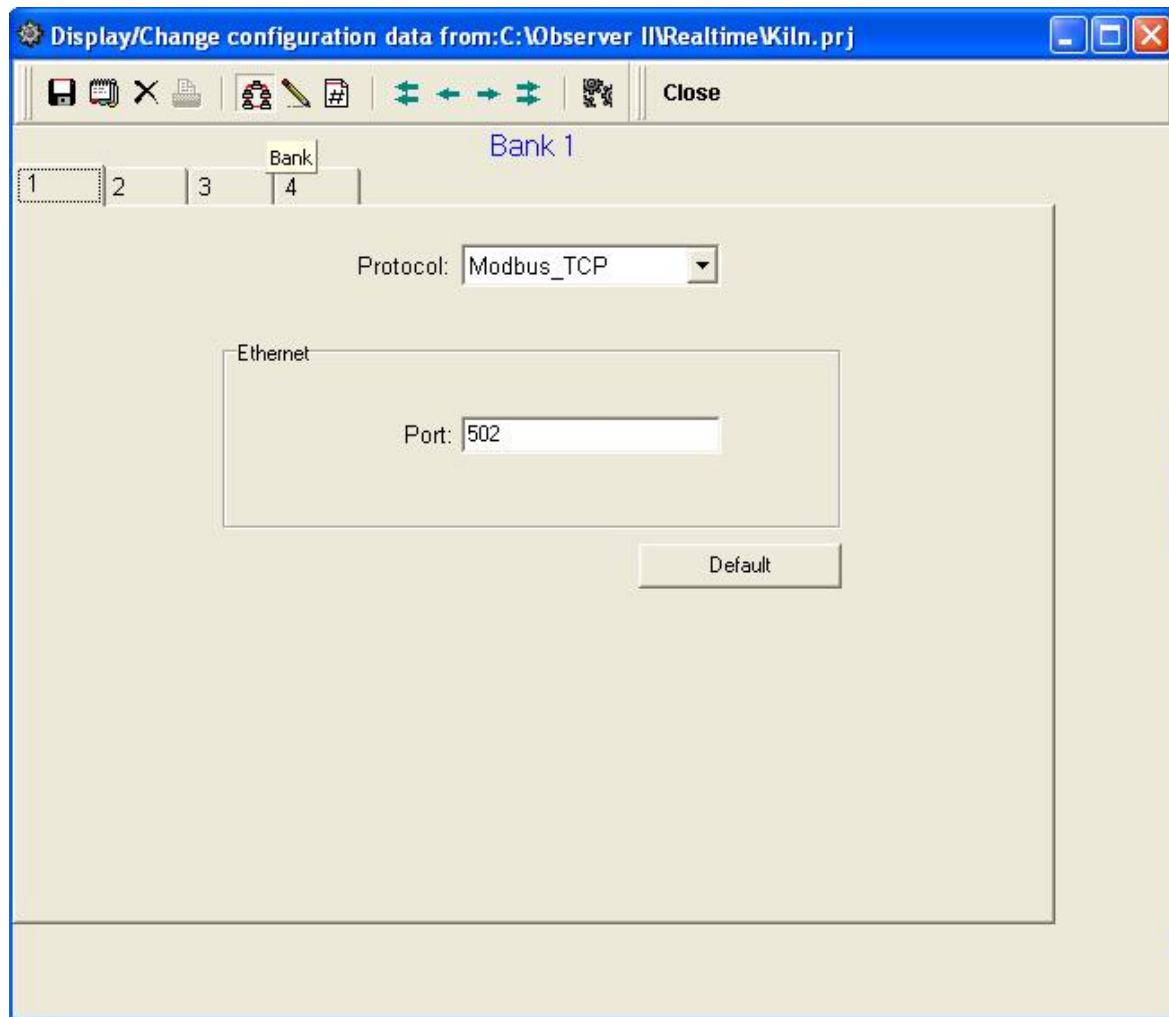
Communication: It is used to set data display time for Real-Time Viewer. User can select one from the following for real time monitoring.



For example, if recorder and Observer are located at different places connected through Ethernet across different gateways, then user can set the communication time from this option. If 60 sec is set, then Observer will exchange data with the recorder once in 60 sec. When recorder and Observer are separated in far distance, it is preferable to use Ethernet option so that it can have better data transfer rate for communication.



Bank: It is to modify the channel for communication between Recorder and Observer from Real-Time Viewer. Four banks are available. In each bank protocol options Disable, Modbus_RS232 and Modbus_TCP are available for user selection. This Bank is used for Real-Time Viewer only, which is different from the Bank used for recorder itself on Page 60.



For Ethernet, Recorder uses port no. 502 for communicating with Observer. If you change the port number in Observer, you cannot establish communication between Observer and Recorder. Port no: 502 is used to establish communication between recorder and Observer software to exchange data on Ethernet over Modbus_TCP protocol.

5.6 DDE dynamic data exchange

DDE link

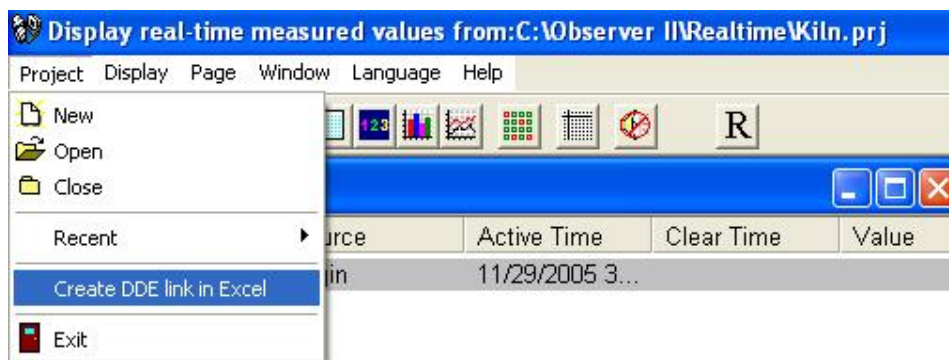
Dynamic Data Exchange (DDE) is a standard inter-application communication protocol built into Microsoft Windows operating systems and supported by many applications that run under Windows. DDE takes data from one application and gives it to another application. It allows Windows programs that support DDE to exchange data between themselves.

Data from the Observer II software can be exchanged with **Excel** on DDE link.

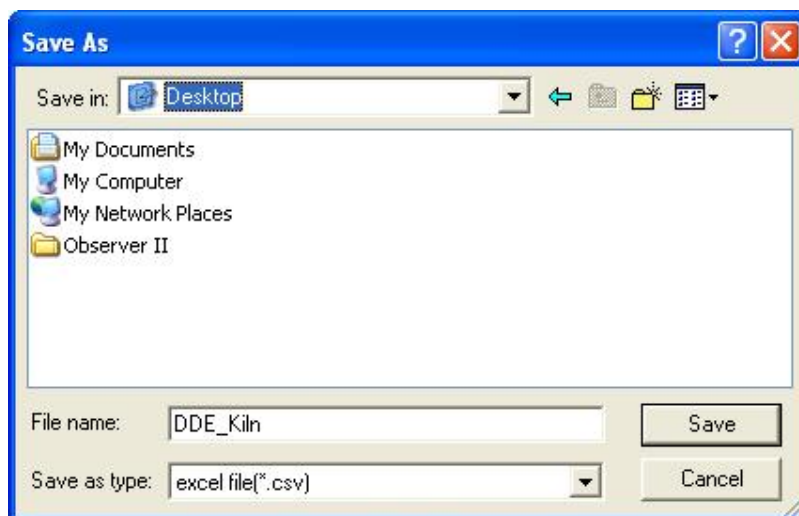
Please note that it is not possible to exchange data directly from the recorder to third party applications like Excel. Once Observer II software is installed with real timer viewer and configured properly in PC, then it is possible to exchange data between Observer software and Excel using DDE link.

Open real time viewer from start – programs – Observer II – Real-time viewer

Project – create DDE link in excel



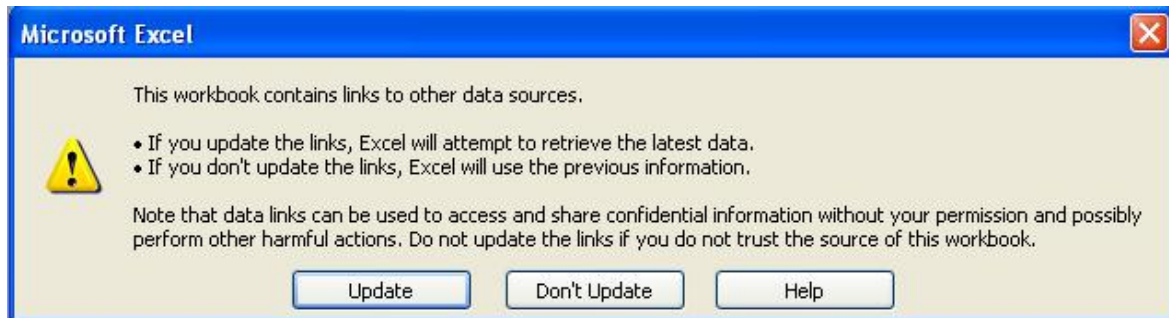
Specify the path and file name as follows.



By default the file name will start with DDE and the project name with underscore in between to avoid confusion in naming the file. Save the file name in PC at selected path as above to proceed further. For example, if desktop is selected in the path, then the file should be available in the desktop. Please check up the desk top for the excel file.

If the MS Office is not installed in the PC, then you cannot open the excel file created as above procedure. Please contact your system administrator to install MS office software in the PC.

Now try to open the file from the desktop created for using DDE application with the recorder through Observer software.



Click on update to activate DDE between Observer software and Excel application. If the DDE is successful, then real time data of the pens should be updated in excel file as shown in sample screen.

DDE expression format to get real time data from the Observer software is as follows.

=RealTime_Viewer|TagService!_AI1

Application = RealTime_Viewer

Topic = TagService

Tag name = AI1

Please note that every tag name will have underscore after “!” character. It is possible to exchange data related to AI, DI, DO, Counters and Totalizers between Observer software and third party applications running under windows operating systems visa DDE.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Name	Unit	Value												
1	A1	°C	31.4												
2	A2	°C	ERROR												
3	A3	°C	ERROR												
4	D11		0												
5	D12		0												
6	D13		0												
7	D14		0												
8	D15		0												
9	D16		0												
10	D17		0												
11	D18		0												
12	D19		0												
13	D20		0												
14	D21		0												
15	D22		0												
16	D23		0												
17	D24		0												
18	D25		0												
19	D26		0												
20	D27		0												
21	D28		0												
22	D29		0												
23	D30		0												
24	D31		0												
25	D32		0												
26	D33		0												
27	D34		0												
28	D35		0												
29	D36		0												
30	D37		0												
31	D38		0												
32	D39		0												
33	D40		0												
34	D41		0												
35	D42		0												
36	D43		0												
37	D44		0												

If any “Error” test appears in any cell of Excel, possible reasons is no data available at selected tag. Check the data availability at the recorder and Observer software for a particular tag.

If any “NAME” text appears in the Excel file, it indicates that particular tag is not configured properly. Tag name may not available in Observer software. If this happens, check the valid tag names in Observer software at the following link

Real time viewer - Display – configuration data

Note: If Excel file is not opening from the selected path, then check the following

1. RAM size in the PC is very little. Restart the computer and then create the DDE link once again and open the Excel file.
2. Increase virtual memory in the PC. Please contact system administrator to check the virtual memory settings in the PC in following steps.
My computer-properties-advanced-performance settings –advanced-virtual memory.

DDE with third party applications

Once the data is available at Excel at particular cell, then data can be exchanged with the third party applications like PLC, SCADA, and Visual Basic etc.

If data is to be exchanged with PLC, then PLC programmer can write Visual basic macro in Excel from the following link

Excel – Tools – macro

For the source code examples, PLC programmer may check the PLC manuals for DDE sample macros.

It is also possible to exchange data from recorder to SCADA applications through DDE.

Example 1

DDE link between Allen-Bradley SLC 5/03 PLC and Excel

Task: Write a block of data (10 floating points) from Excel to PLC.

Name of the Excel file = Reports.XLS

Data Source: D 37 to D 46, data in total 10 cells

Target= PLC, Starting address= F8

User RSLinx to configure PLC and DDE link

DDE topic name in RSLinx= DDE_REPORTS

Sub Block_Write()

 'open dde link: testsol=DDE Topic This is comment only

RSIchan = DDEInitiate("RSLinx", "DDE_REPORTS")

 'write data thru channel This is comment only

DDEPoke RSIchan, "F8:2,L10", Range("[Reports.XLS]PROCESS!D37:D46")

 'close dde link This is comment only

DDETerminate (RSIchan)

End Sub

Example 2

DDE link between Allen-Bradley SLC 5/03 PLC and Excel

Task: Read a block of data (5 integers) from PLC to Excel

Name of the Excel file = Reports.XLS

Data Source: PLC, Starting address= N7:30

Target cells in Excel= A7 to A11

User RSLinx to configure PLC and DDE link

DDE topic name in RSLinx= DDE_REPORTS

Sub Block_Read()

'open dde link: testsol=DDE Topic This is comment only

RSIchan = DDEInitiate("RSLinx", "DDE_REPORTS")

'get data and store in data variable This is comment only

data = DDERequest(RSIchan, "N7:30,L5,C1")

'Paste data into selected range This is comment only

Range("[Reports.XLS]DDE_Sheet!A7:A11").Value = data

'close dde link This is comment only

DDETerminate (RSIchan)

End Sub

Example 3

DDE between Observer software and SCADA (Allen-Bradley RSVIEW32)

When the Real time viewer in Observer II is working well in PC, then the tag data from Observer software will be available in the expression format as follows

=RealTime_Viewer|TagService!_AI1

Application = RealTime_Viewer

Topic = TagService

Tag name = _AI1 (Please observe underscore before the name of the tag)

The above tag information can be directly configured in SCADA to enable DDE between Observer software and RSVIEW 32 SCADA. There is no need to configure any thing at RSLinx.

Procedure for configuration

- 1) Open SCADA project

- 2) System – Node – Select DDE server as data source
- 3) Name = VR18 (No gaps)
- 4) Application = RealTime_Viewer
- 5) Topic = TagService
- 6) Check enable in the box. (This node should be selected)
- 7) Now open the data base
- 8) Create analog tag with all the details similar to the tag at the recorder.
- 9) Select VR18 at the NODE
- 10) Write the tag address, this should be same as tag name at the recorder and Observer software.
For ex: analog input 1 AI1 should be written as _AI1 (Please note that underscore is required before the name of the tag, otherwise data will be not exchanged).
- 11) Now open the tag monitor and configure for the above tag for checking of DDE with the tag.

If DDE is configured properly, then tag value should appear correctly at the tag monitor with state as “VALID”. If any error message is available, then you have to repeat from step 1. Please note that before checking tag monitor, real time viewer in PC should be in running condition.