**User Manual** 

# **Data Acquisition Studio**

**BrainChild** 

UMDAQC Rev 3.0, 02/2011

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#### NOTE:

Do not open IO Studio and Real time viewer at same time in your PC. First complete IO module configuration by using IO studio software, close IO studio, then, open Real time viewer

It requires to buy USB hardware lock (Keypro) from supplier to run RealTime viewer in PC. One single license is required to run Real Time Viewer in single PC. It is not required to purchase Hardware lock to view historical data in other computers via LAN. With out hardware lock, Real Time Viewer in Data acquisition software will run for 1 hr. in demo mode

Original equipment manufacturer reserves right to modify the document with out notice

# 1. Introduction

#### 1.1 Introduction

Data Acquisition Studio (DAQ) software is PC based data logging and Acquisition software. It acquires data from Modbus RTU/ Modbus TCP slave devices like IO Modules, Recorders, Controllers etc., and shows Real time data in PC in form of Trends, Bar graphs, Digital values etc. and store data in PC for later archival.

DAQ support till 2048 tags (from V1.2 or later). One tag means one channel and it can be either Analog input or Analog output or digital input or digital output or Math channel

#### **1.2 System requirements**

#### Data acquisition Software

PC with Minimum 1 GHz processor, 512 MB RAM 1 GB MB free space in the hard disk RS 232 serial port/ Ethernet Network adopter RJ 45 female

Operating system: Windows XP, Windows Vista, Windows 2000, Windows 2003 & Windows 7

Note: For IO studio software, it requires to install dot net frame work 2.0. It is not supported for Windows ME, Windows NT and Windows 2000

#### 1.3 DAQ features

#### 1.3.1 Real Time Viewer

- ✓ 2048 tags including AI, AO, DI, DO & Math
- ✓ 1 to 24 configurable tags display per page, maximum 200 display pages
- ✓ Math channels
- ✓ 100 Timers, 50 Counters and 50 Totalizer's
- ✓ 100 comments for Alarms
- ✓ Real time trends, Bar graphs, Digital value display
- ✓ Real Time Alarms
- ✓ Log Speed: 1, 2, 5 10, 30, 60 & 120 Sec, Log Methods: Instant, Average, Minimum & Maximum, Log trigger type: By time, By value change
- ✓ Alarms by Email

- ✓ Display languages: English, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, Spanish, Thai and Czech, Chinese (Traditional) and Chinese (Simplified)
- ✓ Connection to IO Modules, Paperless Recorder, Controllers and any third party devices via Modbus RTU or Modbus TCP protocol
- ✓ Five different types of Events can be configured for each channel and each event support 2 jobs. So, total 10 different jobs can be set per each channel
- ✓ Event Type available for Trigger: H, HH, L, LL, Rate of increase, Rate of decrease and Error.
- ✓ Jobs Available to link with events: Log Alarm, Log Event, Log Alarm (Auto ack.), send email, Sound buzzer, DO Latch ON, DO Latch OFF, DO Process, Enable Timer, Disable Timer, Preset Totalizer, Reset Totalizer, Enable Totalizer, Disable Totalizer, Preset Counter, Reset Counter, Increase Counter, Decrease Counter, Log Report, Reset Min/Max/Avg and Log Message
- Project Auto configure option available (Generate tag data base automatically once IO modules are connected to the network and create a new project)
- ✓ Supported Math functions: SIN, COS, EXP, SQRT, LN, LOG, ABS, POW, ROUND, HI, LO, INV, TG, CTG, ASIN, ACOS and ATG
- ✓ Source of Math channel: Analog inputs, Math channels, Counters and Totalizers
- ✓ Data Types: 2 byte, 4 byte and 8 byte, Decimal: 0 to 4
- ✓ Real time + Historical combined by changing different display page properies

#### **1.3.2 Historical Viewer**

- ✓ Historical trend
- ✓ Historical Alarms/Events
- ✓ Reports (Daily, Weekly & Monthly)
- ✓ Display Historical values in tabular column
- ✓ Mark Remarks on data (Comments)
- ✓ Search data by Time, Timer Period, Event/Alarm, tag wise and Remark
- ✓ View trends both Horizontally and Vertically
- ✓ Zoom out & Zoom In
- ✓ Display view options available at 1 sec/dot, 2 sec/dot, 5 sec/dot, 10 sec/dot, 20 sec/dot, 30 sec/dot, 1 min/dot, 2 min/dot, 5 min/dot, 10 min/dot, 30 min/dot, 10 min/page, 30 min/page, 1 hr/page, 2 hr/page, 4 hr/page, 8 hrs/page, day/page, week/page and Month/page

- ✓ Display white back ground/black background
- ✓ Export data and alarms/events to CSV files. (Specify time or time period or all)
- ✓ Print trend view, Event/Alarm list, Reports & Tag Values

#### **1.3.3 Sample Applications**

Data Acquisition Studio Software in PC will act as Modbus Master and Acquire data from IO modules acting as Modbus Slaves in RS485 network. The **serial port** of the PC is connected to an **RS232/RS485 Converter like SNA10A** which in turn is connected to the Network.

Alternatively Ethernet port of PC is connected to Protocol converter like PC-E as shown attached





# Fig2: Application by Ethernet



Fig3: Application by both Serial port and Ethernet





Fig: Data exchange between Master and Slaves via wireless devices, Maximum distance till 800 meters



Fig: Data exchange between Master and Slave by Modbus RTU protocol

# 2. Software Installation

#### 2.1 DAQ software installation

Log in to computer using administrator rights

Install DAQ software from CD. It installs Real Time viewer, Historical viewer and IO studio software into PC. IO Studio software is used to configure Modbus based IO modules. IO studio requires .Net frame work and it will be installed during installation of DAQ software

Insert Hardware lock (Key pro) in PC at USB port. With out hardware lock, DAQ software will run for one hour in demo mode

DAQ Studio Setup Choose Destination Location Select folder where setup will install files.		
	The Installation Wizard will install DAQ Studio Version 1.20 B6 in the following folder. To install to this folder, click ' Next '. To install to a different folder, click ' Browse ' and select another folders.	
	Destination Folder C:\DAQ Studio Browse	
	< Back Next > Cancel	

Run DAQ as follows

Start-Programs-Data acquisition studio-Real time viewer



### 2.2 DAQ software Uninstall

Start-Programs-Data Acquisition studio-Uninstall

# 3. IO STUDIO

This is a tool useful for setting configuration of IO module and used for diagnostics purpose. This tool will be installed during installation of Data acquisition software and can be opened from Start-Programs-Data acquisition Studio-IO Studio

Ex: Set communication settings Read IO status in PC, Force Outputs to test the Output modules

Do not open IO Studio and Real time viewer at same time in your PC. First complete IO module configuration using IO studio software, close IO studio, and then open Real time viewer



Note: For IO studio software, it requires to install dot net frame work 2.0. It is not supported for Windows ME, Windows NT and Windows 2000

IO Module: Set address say 1 for the IO Module using DIP switches on the Module itself.

Connect 24V DC Power supply to the IO module and make sure that Dip switch10 is OFF to allow communication of IO Module with PC on Default communication settings. If you are using RS232/RS485 converter make sure that you have selected all the communication settings properly as follows.

BAUD RATE	9600
DATA BITS	8
PARITY	NONE
STOP BITS	1

ieneral	Port Settings	Driver Details	Resources	
		Bits per second:	9600	<b>~</b>
		Data bits:	8	<b>~</b>
		Parity:	None	~
		Stop bits:	1	~
		Flow control:	None	~
		Ad	vanced	Restore Defaults

In the PC, select above settings at the COM port.

Right click on My computer - Properties - Hardware-Device Manager- COM ports

#### Open IO studio software

(	Set Program Access and Defaults						
1	Windows Catalog						
₹	Windows Update						
<b>1</b>	Programs	÷	m	Data Acquisition Studio	≯	ţħ,	IOStudio
••••				×		89	RealTimeViewer
Ì	Documents	÷	-			1	UnInstall
<b>V</b> -	Settings	×	ŀ				
$\mathbf{P}$	Search	•					
?	Help and Support						
	Run						

🖡 IO Studio				
File About	_			
Setup Comms				
Exit	Module ID	1	Stop	Comms
-Setup Comms P	ort			
Comm Port	Comm 1			
Baud Rate	9600 💌			
Poll Rate	5 × 10ms			
	Select			

If every thing is proper, IO Studio will read the IO Module and show the status of the IO registers.

If there is a problem, please check the following

Dip switch settings in IO module Communication cable RS485/RS232 converter communication settings COM port number in PC and driver settings Close Real time viewer

Module T Software Ve				
Modbus Address	Value	Label		
10001	0	Digital Input 1	▲	Description of Modbus Register
10002	0	Digital Input 2		
10003	0	Digital Input 3		Status of Digital Input 1.
10004	0	Digital Input 4		Red (0) = 0FF
10005	0	Digital Input 5		Green (1) = ON
10006	0	Digital Input 6		
10007	0	Digital Input 7		
10008	0	Digital Input 8		
10009	0	Digital Input 9		
10010	0	Digital Input10		
10011	0	Digital Input11		
10012	0	Digital Input12		
10013	0	Digital Input13		
10014	0	Digital Input14		
10015	0	Digital Input15		
10016	0	Digital Input16		
30001	356	Type/SW Version		Move Mouse pointer over Value
30002	0	Input Status		for Description
40003	0	Counter 1		
40005	0	Counter 2	•	



	Type: 113		
Software Ve	ersion: I		
Modbus Address	Value	Label	
1	1	Relay Output 1	Description of Modbus Register
2	1	Relay Output 2	
3	0	Relay Output 3	Status of Relay Output 2.
4	0	Relay Output 4	Red (0) = OFF
30001	369	Type/SW Version	Green (1) = ON
40002	3	Output Status	
30100	1	DIP Switch	Double Click to change
40101	0	Output Watchdog Timer	
40102	0	Modbus Master Timeout	
40103	0	Modbus Master Rate	
40121	1	Baud Rate	
40122	0	Parity	
40123	0	Stop Bit	
40124	0	Reply Delay	

Move Mouse pointer over Value for Description

	rsion: 1			
Modbus Address	Value	Label		
10001	0	Digital Input 1	<b></b>	Description of Modbus Register
10002	0	Digital Input 2		
10003	0	Digital Input 3		Status of Digital Output 4.
10004	0	Digital Input 4		Red (0) = 0FF
10005	0	Digital Input 5		Green (1) = ON
10006	0	Digital Input 6		
10007	0	Digital Input 7		Double Click to change
10008	0	Digital Input 8		
17	1	Digital Output 1		
18	1	Digital Output 2		
19	1	Digital Output 3		
20	1	Digital Output 4		
21	0	Digital Output 5		
22	0	Digital Output 6		
23	0	Digital Output 7		
24	0	Digital Output 8		
30001	358	Type/SW Version		Move Mouse pointer over Value
30002	0	Input Status		for Description
40003	15	Output Status		

10-8AI			
	Module	Туре: 103	
	Software Ve	ersion: 1	
	Modbus Address	Value	Label
	30001	359	Type/SW Version
	30002	þ	Current Input 1
	30003	0	Current Input 2
	30004	0	Current Input 3
	30005	0	Current Input 4
	30006	0	Current Input 5
	30007	0	Current Input 6
	30008	0	Current Input 7
	30009	0	Current Input 8
	30010	21845	Input Status
	30100	1	DIP Switch
	40121	1	Baud Rate
	40122	0	Parity
	40123	0	Stop Bit
	40124	0	Reply Delay

Description of Modbus Register

0 - 20mA Current Input 1

Range = 0 - 4095 (12 bits)

Move Mouse pointer over Value for Description

-10	-8A	IV	-
-----	-----	----	---

Module Software Ve	Type: 104 ersion: 1	
Modbus Address	Value	Label
30001	360	Type/SW Version
30002	þ	Analog Input 1
30003	0	Analog Input 2
30004	0	Analog Input 3
30005	0	Analog Input 4
30006	0	Analog Input 5
30007	0	Analog Input 6
30008	0	Analog Input 7
30009	0	Analog Input 8
30010	21845	Input Status
30100	1	DIP Switch
40121	1	Baud Rate
40122	0	Parity
40123	0	Stop Bit
40124	0	Reply Delay

Description of Modbus Register

0 - 10V Voltage Input 1

Range = 0 - 4095 (12 bits)

Move Mouse pointer over Value for Description

Software Ve	Type: 105 ersion: 1			
Modbus Address	Value	Label		
30001	361	Type/SW Version	-	Description of Modbus Register
30002	166	Thermocouple Input 1		
30003	-32768	Thermocouple Input 2		Thermocouple Input 1
30004	-32768	Thermocouple Input 3		Range = -xxx.x to +yyyy.y
30005	-32768	Thermocouple Input 4		Hange = 388.8 to typyy.y
30006	-32768	Thermocouple Input 5		Example: 101.4°C will be read back as
30007	-32768	Thermocouple Input 6		1014
30008	-32768	Thermocouple Input 7		
30009	-32768	Thermocouple Input 8		
30010	215	CJC Temperature		
30011	21844	Input Status		
30016	65415	Calibrate Raw Data		
40017	0	Calibrate Control		
30100	1	DIP Switch		
40101	1	Thermocouple Type		
40102	50	Line Frequency		
40103	100	CJC Offset		Move Mouse pointer over Value for Description
40104	1	Display Units °C/°F		tor Description
40121	1	Baud Rate		
40122	0	Parity	-	

-10-6R1	rd ———			
	Module Software Ve			
	Modbus Address	Value	Label	
	30001	365	Type/SW Version	
	30002	8500	RTD Input 1	
	30003	-32768	RTD Input 2	
	30004	-32768	RTD Input 3	
	30005	-32768	RTD Input 4	
	30006	-32768	RTD Input 5	
	30007	-32768	RTD Input 6	
	30008	1364	Input Status	
	30016	34423	Calibrate Raw Data	
	40017	0	Calibrate Control	
	30100	1	DIP Switch	
	40101	1	RTD Type	
	40102	50	Line Frequency	
	40103	0	Display Units *C/*F	
	40121	1	Baud Rate	
	40122	0	Parity	
	40123	0	Stop Bit	
	40124	0	Reply Delay	

Description of Modbus Register

RTD Input 1

Range = -xxx.x to +yyyy.y

Example: 101.4°C will be read back as 1014

Move Mouse pointer over Value for Description

Module 1 Software Ve				
Modbus Address	Value	Label		
10001	0	Digital Input 1	-	Description of Modbus Register
10002	0	Digital Input 2		
10003	0	Digital Input 3		Status of Digital Output 1.
10004	0	Digital Input 4		Red (0) = OFF
17	1	Digital Output 1		Green (1) = ON
18	0	Digital Output 2		
30001	368	Type/SW Version		Double Click to change
30002	0	Input Status		
40003	1	Output Status		
30004	-32768	RTD Input 1		
30005	-32768	RTD Input 2		
30006	0	Analog Input 1		
30007	0	Analog Input 2		
40008	0	Analog Output 1		
40009	0	Counter 1		
40011	0	Counter 2		
40013	0	Counter 3		Move Mouse pointer over Value for Description
40015	0	Counter 4		Tor Description
30091	0	Calibrate Raw Data		
40092	0	Calibrate Channel	-	

Studio							
About							
			Μ	Iodule ID 1	Sh	top	nms
				'			
	-10-160	N					
	10-16	Л					
		Module 1					
		Software Ve	rsion: 1				
		Modbus	Value	Label			
		Address	1 diao	2000			
		40044	0	Counter Capture 5	<b>_</b>	Description of Modbus Register	-
		40044		Counter Capture 6			
		40048		Counter Capture 7	-	Baud Rate - Enter one of the following	
		40050		Counter Capture 8	-	values, then switch on SW10 to enable	
		40052		Counter Capture 9	-	2400	
		40054		Counter Capture 10	-	4800	
		40056		Counter Capture 11	-	9600	
		40058	0	Counter Capture 12	-	19200 38400	
		40060	0	Counter Capture 13	-	57600	
		40062	0	Counter Capture 14	-	11520	
		40064	0	Counter Capture 15			
		40066	0	Counter Capture 16			
		30100	1	DIP Switch			
		40101	1	Counter Mode			
		40102	0	Input Filter			
		40103	0	Counter Zero			
		40121		Baud Rate		Move Mouse pointer over Value for Description	
		40122		Parity		TOF Description	
		40123		Stop Bit			
		40124	0	Reply Delay	-		

#### Configuration:

For ex: If you want set baud rate, enter the required value in the register 40121, and then press enter in the PC keyboard. Set all the parameters once and then switch off the power supply to the IO Module. Now switch on the Dip switch 10 on the module to make above settings effective. After power on, the IO Module will have new Communication settings. Please note that at this point of time, IO module may not communicate with PC because you may have different settings at RS232/RS485 converter and also COM port settings in the PC.

#### Testing the IO Module:

For ex: If you want to test Digital Output module 16DO module. It contains total 16 digital outputs. You can connect IO module with PC as explained above via RS232/RS485 converter. You can force digital output from low to high and check its status at the IO module and also you can observe LED status on the IO Module itself.

Do not open IO Studio and Real time viewer at same time in your PC. First complete IO module configuration using IO studio software, close IO studio, then, open Real time viewer

# 4. Configuration

#### 4.1 Tools in DAQ software

#### 4.1.1 Tool Bar



- Configuration data
- New project or close existing project

Open existing project

- Belect page (Choice)
- Measured data or Historical viewer

Arrange all (Show default screen layout-mix-digital values, bar graph, trends, Alarm page)

Display Events/Alarms list



- 🛄 Display Bar graph
- 🚾 Display Trend
- Display all channel Digital

Example 2 Check status of Counters, Digital inputs, Digital Outputs etc.





💷 Option

> Delete this project



- Customized Comments for Alarms
- Project Auto Configure
- Olose and return to main program

#### 4.1.2 Menu Bar

File(F) View(V) Page(P) Window(W) Language(L) Help(H)

💔 Disp	ola	y rea	al-t	ime	m	
File(F)	Vi	ew(V)	Pa	ge(P)	Wi	
🗋 New à Open 🛅 Close						
Recer	ht					
🔏 Create DDE link in Excel						
🖸 Exit						
View(\	/)	Page(	(P)	Wind	low(	

View(V)	Page(P)	Window(W)	La
	uration dat		
' 🔤 Measur	ed data	Ctrl+Alt+I	М
		_	
Window(W)	Language	e(L	
🗮 Trend			
🎹 Bar			
💯 Digital			
💷 Event			
🖽 Arrange a	all		
III All chann	el digital		

🛄 Status

Language(L) Help(H)
Chinese(Simplified)
Chinese(Traditional)
Czech
• English
French
German
Italian
Japanese
Korean
Polish
Portuguese
Russian
Spanish
Thai

# 4.2 Bank settings

# 4.2.1 RS232 bank setting

Open Real time viewer from Data acquisition studio software

Start-Programs-Data acquisition studio-Real Time viewer



	P RealTime Configure        X           □ □ × ⊗         ▲ □ ∞           □ □ × ⊗         ▲ □ ∞           □ □ × ⊗         ▲ □ ∞								
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type	
	Info	rmation					X		
	The	ere are no tag	ı data in	the project Yes	ll Do you wan	t to configure	it ?(Y/N)		

#### Click on "NO"

🏶 Auto-configuration	
Device Type: I/O Card	Bank: 🔽 💌
IP address Example : 192.168.0.111 IP List:	< Please key in IP here and then press '+' button to add it to the IP list . + - - - - - - - - - - - Please select one IP form IP List and then press '-' button to remove it .
Use Gateway:Device Node address	•
	OK X Cancel

Click on "Cancel"

Set "Bank" settings properly first and save it

RealTime	RealTime Configure						
H 🖾 🗙 🕭  (							
TAdd Add							
No. Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type
/							
Click here							

RealTime Config	gure	
H 🔍 🗙 🔈   🎄 🔪 🖻	% 🖬 (≠ + → ≠ ) 💱 🖸	
	Bank1	
1 2 3 4		
	Protocol: Modbus_RS232 -	
Total 4 banks available for configuration	R5232	
	Com Port : COM1	
	Baud Rate : 9600	
	Parity : No	
	Data Bits : 8	
	Stop Bits :	
	Default	

Total 4 banks available for configuration and they are for accepting incoming connections from various ports

For ex: Bank1: Set as Modbus\_ RS232

Now, you can receive data to DAQ software from any of above ports if they are available After completing Bank settings, click on icon 🗐 "Save" and then click on icon 🥥

ĺ	Information 🛛 🕅
	To let the new Bank setting take effect, system will save them then restart !! Continue ?(Y/N)
	Yes No



# 4.2.2 Ethernet Bank setting

RealTime Configure	
Bank2	
1 2 3 4	
Protocol: Modbus_TCP -	
Ethernet	
Port : 502	
Default	

Select Modbus\_TCP protocol in any freely available Bank. Port number should be 502 for Modbus TCP protocol

After completing Bank settings, click on icon 目 "Save" and then click on icon 🧕





## 4.3 Create New Project for IO modules

Open DAQ software

Start-Programs-Data acquisition studio-Real Time viewer

🕸 Create a new project 🛛	
Enter the new name : Test1  Cancel  Cancel	

Information	
There are no tag data in the projec	ct !! Do you want to configure it ?(Y/N)
Yes	No

Click on "Yes"

Auto-configuration	
Device Type: 1/O Card	Bank: 1 💽
Node address	To: 1
	✓ OK Kancel

Select the Bank properly and enter Address of IO module as shown above. Click on "OK"

Note: If you have more than one IO module already connected in RS485, then select "Auto-Update" and then you can enter starting and ending address of IO module in above screen to acquire tag data base of all the IO modules at a time. Alternatively, other modules can be added individually as explained later

• R	ealTime	Configur	e							
	Add									
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type		
	All List	AIV1_1	1	No	1	I/O Card	AI	Float		
1	I/O Card_1	AIV2_1	1	No	1	I/O Card	AI	Float		
		AIV3_1	1	No	1	I/O Card	AI	Float		
		AIV4_1	1	No	1	I/O Card	AI	Float		
		AIV5_1	1	No	1	I/O Card	AI	Float		
		AIV6_1	1	No	1	I/O Card	AI	Float		
		AIV7_1	1	No	1	I/O Card	AI	Float		
		AIV8_1	1	No	1	I/O Card	AI	Float		

Click on icon 🔲 "Save". It shows Real time viewer screen in PC

1       Logn       System       04/09/09 13:53:30       90.00	
1       Login       System       04,05,05133:53:30       90.00       90.00       90.00       100.00 <th></th>	
	0.00
1/2       1/2	.00
	.00 80.
Visit       Aira       Nomal       Event/Glaund       Aira       Nomal       Event/Glaund       Aira       Nova       Solo	.00
/ 64.0       -       40.00       -	.00 . 60.
30.00       10.00       10.00 <t< td=""><td>.00</td></t<>	.00
1     2000     2000     2000     2000     2000     1       1     1000 <td>.00</td>	.00
Image: Control of the second secon	.00
YAL     Avm     Normal     Event/Chared     AVV.1	.00 . 10.
Digital-Page1	o <b>1</b> 0.a
	AIV8_
	_ 0
V7_1 AIV8_1	
44,36 1346716 13467756 13469756 13469756 1350756 1350756 135075 040500000000	13:54 04/09

If it is by Ethernet, screen shots will be as shown below

💱 Auto-configu	ration	
Device Type: I/C		Bank: 2
Protocol: Moc	1005_1CP	Auto-update
Example : 192.168.0.111	192.168.0.112	< Please key in IP here and then press '+' button to add it to the IP list . + -
		<please form<br="" ip="" one="" select="">IP List and then press '-' button to remove it .</please>
Vse Gateway:De	vice Node address 5	•
	-	OK Cancel

Note: When Ethernet is used in a bank, it is not possible to add many IO modules to the tag data base at one step. It requires adding each IO module individually

● R	ealTime	Configur	e					
	🕮 🗙 📚 🗍							
•	Add	Modify 🔡	Delete					
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type
	All List	AII1_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
1	I/O Card_1	AII2_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
		AII3_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
		AII4_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
		AII5_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
		AII6_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
		AII7_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float
		AII8_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float

# 4.3.1 Add new IO module by RS232/RS485

Make sure that IO module is connected to PC via RS485 converter Bank setting is made properly for RS232, say at Bank1

In Real time viewer, click on Icon Configuration data icon

RealTime	Configur	e							
<b>↓ Add</b> Modify <b>↓</b> Delete									
No. Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Тад Туре	Data Type		

Click on "Add" button

🏶 Add A Tag		
	🔽 Auto-update	
Device Type: I/O Card	Bank: 1	Tag Name: Auto
Protocol: Modbus_R5232		Node address: 😫 🚖
		✓ OK X Cancel

Select Bank properly

Enter node address of the IO module and click on "OK". If the module is connected properly, it acquire data base of selected IO module automatically

• R	ealTime	Configui	re					
	🕮 🗙 📚 🗍	🔹 🔪 🖩 🖏	⊒    ≠	+ + \$				
	Add	Modify 1	Delete					
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type
	All List	AIV1_1	1	No	1	I/O Card	AI	Float
1	I/O Card 1	AIV2_1	1	No	1	I/O Card	AI	Float
		AIV3_1	1	No	1	I/O Card	AI	Float
		AIV4_1	1	No	1	I/O Card	AI	Float
		AIV5_1	1	No	1	I/O Card	AI	Float
		AIV6_1	1	No	1	I/O Card	AI	Float
		AIV7_1	1	No	1	I/O Card	AI	Float
		AIV8_1	1	No	1	I/O Card	AI	Float

#### 4.3.2 Add new IO module by Ethernet

Make sure that IO module is connected to PC via PC-E converter

Ex: Module ID = 5 IP address of PC-E is 192.168.0.112

Make sure that Bank setting is made properly for Modbus\_TCP, say at Bank2

Use "Ping" instruction at Dos prompt and make sure that PC-E is working fine

Command Prompt
Microsoft Windows XP [Version 5.1.2600] <c> Copyright 1985-2001 Microsoft Corp.</c>
C:\Documents and Settings\user>ping 192.168.0.112
Pinging 192.168.0.112 with 32 bytes of data:
Reply from 192.168.0.112: bytes=32 time<1ms TTL=64 Reply from 192.168.0.112: bytes=32 time<1ms TTL=64 Reply from 192.168.0.112: bytes=32 time=1ms TTL=64
Reply from 192.168.0.112: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.0.112: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 0ms, Maximum = 1ms, Average = 0ms

Use IO studio software and make sure that IO module is working fine and you are able to see registers of IO module in PC

loStudio		
File About		
	Module ID 5	Start
	<u>-</u>	
	Setup Comms Port	
	Comm Port TCP/IP	-
	Poll Rate 5 ×10	Oms
	IP Address 192 168 0	112
	IP Address   192   168   0	
	Select	
lOStudio		
File About		
	Module ID 5 Stop	Comms
-10-841	,	
	Module Type: 103 Software Version: 2	
	Modbus Value Label Address	
E	30002 0 Current Input 1	iption of Modbus Register
	30003         0         Current Input 2           30004         0         Current Input 3           30005         0         Current Input 4	
	30005         0         Current Input 4           30006         0         Current Input 5           30007         0         Current Input 6	
	30008 0 Current Input 7 30009 0 Current Input 8	
	30010 21845 Input Status 30100 773 DIP Switch	
	40121 38400 Baud Rate 40122 0 Parity	
	40123 1 Stop Bit 40124 0 Reply Delay	
		Move Mouse pointer over Value for Description
🕅 Add A Ta	g	
	🔽 Auto-upd	
Devi	e Type: I/O Card 🗨 Bank:	Tag Name: Auto
	rotocol: Modbus_TCP 🛛 🔽 Use Gateway:Device No	de address 5 🚖 IP address: 192.168.0

Select IO card in Device type

🗶 Cancel

🗸 ок

Select Bank properly as per Bank settings

Select Use Gateway and Select address of IO Module

Enter IP address of PC-E converter which is connected to IO modules via RS485 converter

Click on "OK"

If IO module is connected properly to PC via PC-E, then tag data base of IO module will be added as shown attached

<sup>●</sup> Re	ealTime	Configur	e				_			
Add Modify										
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type		
	All List	AII1_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float		
1	I/O Card_1	AII2_1	2	Yes	5 / 192.168.0.112	I/O Card	AI	Float		
		AII3_1	2	Yes	5 / 192.168.0.112	I/O Card	AI	Float		
		AII4_1	2	Yes	5/192.168.0.112	I/O Card	AI	Float		
		AII4_1 AII5_1	2	Yes Yes	5/192.168.0.112 5/192.168.0.112	-	AI	Float Float		
		_	-			I/O Card				
		AII5_1	2	Yes	5/192.168.0.112	I/O Card I/O Card	AI	Float		

#### 4.4 Create a New project for Paperless Recorder

#### 4.4.1 Create a New project by Ethernet

- Check IP address of Paperless Recorder. Press "Config" key, select "System info", press "Enter" key. Note down IP address of Recorder. For example, it is 192.168.0.30
- 2. If Paperless Recorder connected to PC directly, then, use cross over Ethernet cable. If Paperless Recorder connected to PC via LAN, then, use straight cable



3. At Dos prompt, using "Ping" instruction, check if communication is OK between Paperless Recorder and PC. If it is OK, then, you should get reply as follows. If there is no reply, then, check Ethernet cable and IP address of Paperless Recorder

🔤 Command Prompt
Microsoft Windows XP [Version 5.1.2600] (C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\mahi.MAHIDHAR>ping 192.168.0.30
Pinging 192.168.0.30 with 32 bytes of data:
Reply from 192.168.0.30: bytes=32 time=1ms TTL=128 Reply from 192.168.0.30: bytes=32 time=1ms TTL=128 Reply from 192.168.0.30: bytes=32 time=1ms TTL=128 Reply from 192.168.0.30: bytes=32 time=1ms TTL=128
Ping statistics for 192.168.0.30: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 1ms, Maximum = 1ms, Average = 1ms
C:\Documents and Settings\mahi.MAHIDHAR>

4. Open the Real time viewer from Start-Programs-DAQ Studio-Real time viewer



- 5. Click "OK"
- 6. For bank1, select Protocol as Modbus\_TCP, make sure Port number is 502 as shown

🕸 F	RealTim	e Confi	igure	
	🕮 >	< 🍋		
				Bank1
1	2	3	4	
				Protocol: Modbus_TCP
				Ethernet
				Port : 502
				Default

7. Click at Save icon 🗟. Then, click "Return" icon 🧕

Informat	tion
2	To let the new Bank setting take effect, system will save them then restart !! Continue $?(Y/N)$
	Yes No

8. Click "Yes". Then, open Real time viewer again from Start-Programs-DAQ Studio-Real time viewer

💱 Create a new project	×
Enter the new name :	
✓ OK X Cancel	

9. Enter the new name for the project. Click "OK"



10. Click at "Yes". Then, it appears the following screen

😵 Auto_Configuration		
Protocol:	VR18 VR18 VR06 I/O Card Auto	Bank: 1 💌
ΓIP address Example: 192,168.0.1 IP Li		Please key in IP here and then press '+' button to add it to the IP list.           +           -              Please select one IP form IP List and then press '-' button to remove it.
🔽 Use Gateway	<b>:Device Node addres:</b> ge	From: 1 🚖 To: 1 🚖
		🖊 OK 🛛 🗙 Cancel

- 11. Select the required Recorder at device type
- 12. Enter IP address of the Recorder. Then, click at "+". Then, IP address should appear in IP List as shown. Then click "OK"

😻 Auto_Configuration	
Device Type: V Protocol: Mo LogSpeed: A	 odbus_TCP
IP address Example: 192.168.0.111	
IP List:	192.168.0.30



If no is selected for auto configuration, then, it appears the following screen

👂 Add A Ta	g			
			🔽 Auto-update	
	Device Type: VR18	-	Bank: 1	Tag Name: Auto
	Protocol: Modbus_TCP	🔲 Use Gate	way:Device Node address	IP address: 192.168.0.30
Log	Type: Enable	Ŧ	LogSpeed: 1 Sec	r Trigger: by Time
	Data Byte Type: 4 Byte	V	LogMethod: Instant	Tolerance:
				Cancel

13. If there is good communication between Recorder and PC, data base will be updated and it appears the following screen

RealTime Configure									
	★ Add     ★ Delete								
No.	Node Name	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Ty 🔼	
	All List	AI1_1	1	No	192.168.0.30	VR18	Channel1	Int16	
1	VR18 1	AI2_1	1	No	192.168.0.30	VR18	Channel2	Int16	
	_	AI3_1	1	No	192.168.0.30	VR18	Channel3	Int16	
		AI4_1	1	No	192.168.0.30	VR18	Channel4	Int16	
		AI5_1	1	No	192.168.0.30	VR18	Channel5	Int16	
		AI6_1	1	No	192.168.0.30	VR18	Channel6	Int16	
		AI7_1	1	No	192.168.0.30	VR18	Channel7	Int16 📃	
		AI8_1	1	No	192.168.0.30	VR18	Channel8	Int16	
		AI9_1	1	No	192.168.0.30	VR18	Channel9	Int16	

14. If required, it is possible to add one more Recorder from here

Click at "Add", then follow on screen instructions and enter IP address of second Recorder

15. Click at Save icon 🗟. Then, click "Return" icon 🧕



16. Click "Yes". Then, it appears Real time screen showing digital values, bar graph, Real time trend, Real time alarms etc.


# 4.4.2 Create a New project by RS485

- In recorder, press "Config". Then, select "Instrument". Press "Enter" Key. For communication, select PC Transfer = RS232/RS485/RS422. Set address properly. Example: 1. Set Baud rate, example: 9600 bps. Set Data format, example:Parity=None, Data bits=8, stop bits=1
- 2. Open Real time viewer
- 3. Set bank properly for RS232. Example: Select Bank2, set protocol = Modbus\_RS232 and then enter all other communication settings exactly same as defined at Paperless Recorder

🚇 Re	alTime	Confi	gure						
	$\square \times$	•	<u>a</u> >	Ĥ	8. B	<b>‡</b> •	- + ‡		
							Ban	<b>(2</b>	
1	2	3	4						
					Prot	ocol:	Disable	e	•
							Disable		
							Modbu	s_RS23	32
							Modbu	s_TCP	

RealTime Configure		
🖶 🕮 🗙 🔈   🎄 📐 🖻 🕯	\ <b>□</b>	
	Bank2	
1 2 3 4		
	Protocol: Modbus_P	s232 •
	R5232	
	Com Port : COM1	•
	Baud Rate : 9600	<b>_</b>
	Parity : No	•
	Data Bits : 8	•
	Stop Bits : 1	•
		Default

4. Click at Save icon 🗟. Then, click "Return" icon 🧕.



5. Open Real time viewer again.

😻 Create a new project	×
Enter the new name : Test2	
OK X Cancel	

6. Enter the new name for the project

Information 🛛 🕅						
2	There are no tag data in the project !! Do you want to configure it ?(Y/N)					
	Yes No					

7. Click "No". Then, click "Add"

💔 Add A Ta	lg		
		🔽 Auto-update	
	Device Type: VR18	Bank: 2	Tag Name: Auto
-1 og	Protocol: Modbus_RS232		Node address: 1
Log	Type: Enable	LogSpeed: 1 Sec	Trigger: by Time
	Data Byte Type: 4 Byte	LogMethod: Instant	Tolerance:
			Cancel

8. Select Device type as VR18/VR06 Recorder. Select Bank properly. If should show protocol: Modbus\_RS232. Enter node address same as address defined at Paperless Recorder. Then, click "OK"

9. If there is good communication between Recorder and PC, data base will be updated and it appears the following screen

RealTime Configure							_ 🗖	
	Image: Add     Image: Barrier Barri							
No.	Node Name	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Ty
	All List	AI1_1	2	No	1	VR18	Channel1	Int16
1	VR18 1	AI2_1	2	No	1	VR18	Channel2	Int16
	_	AI3_1	2	No	1	VR18	Channel3	Int16
		AI4_1	2	No	1	VR18	Channel4	Int16
		AI5_1	2	No	1	VR18	Channel5	Int16
		AI6_1	2	No	1	VR18	Channel6	Int16
		AI7_1	2	No	1	VR18	Channel7	Int16
		AI8_1	2	No	1	VR18	Channel8	Int16
		AI9_1	2	No	1	VR18	Channel9	Int16
		AI10_1	2	No	1	VR18	Channe	Int16
		AI11_1	2	No	1	VR18	Channe	Int16

10. If required, it is possible to add one more Recorder from here

Click at "Add", then follow on screen instructions and enter node address of second Recorder

11. Click at Save icon 🗟. Then, click "Return" icon 🧕

Information						
2	?(Y/N)					
	Yes	No				

12. Click "Yes". Then, it appears Real time screen showing digital values, bar graph, Real time trend, Real time alarms etc.

Display real-time measured value from: C:\DAQ Studio\RealTime\Test1.prj      File(F) View(V) Page(P) Window(W) Language(L) Help(H)	
C 20   20 20 = E   1 ■ ■   1 ■ ■   4 R #	
🛽 Event/Alarm List 📃 🗖 🔀	🚻 Bar-Page1
Ack         Type         Source         Active Time         Clear Time           1         Login         System         08/10/10 16:52:46	
	752.0 1652.0 3308.0 3214.0 100.00 1 -418.0 -148.0
	100.00 100.00 2400.0 2400.0 2400.0 2400.0 2400.0 2400.0 100 100 100 100 100 100 100 100 100
<	AII_1         AI2_1         AI3_1         AI4_1         AI5_1           AI9_1         AI10_1         AI11_1         AI12_1         AI13_1           AI17_1         AI18_1         Math1_1         Math2_1         Math3_1
🛛 Digital-Page 1 📃 🗖 🔀	Trend-Page1
105.2 <sup>AI2</sup> 193.9 <sup>AI3</sup> -54.5	1 Sec/Dot
A14_1 250.5 <b>728.6</b> A16_1 795.5	
AI7_1 1420.7 1782.1 AI9_1 397.9	

## 4.5 Create a New project for Controllers



1. In controller, please set communication settings properly

Example: Set Baud rate: 9600 bps. Address: 1, Parity=None, Data bits=8, stop bits=1

- 2. Set communication settings properly at RS485/RS232 converter
- 3. Open Real time viewer
- 4. Set bank properly for RS232. Example: Select Bank2, set protocol = Modbus\_RS232 and then enter all other communication settings exactly same as defined at Controller

🕸 Rea	alTime Co	onfigure	ł			
	🕮 🗙 🕴		<b>\</b> #	🍇 🖬 🛛 🖛 🗸	🔹 🛛 💱 🖸	
					Bank2	
1	2	3 4				
				Protocol:	Disable Modbus_RS2	• 32
					Modbus_TCP	

RealTime Configure	
H 🖾 🗙 🕭   🎄 🔪 🖻 🕯	X 🖬   ‡ + → ‡   💱 🔟
	Bank2
1 2 3 4	
	Protocol: Modbus_RS232 -
	R5232
	Com Port : COM1
	Baud Rate : 9600
	Parity : No
	Data Bits : 8
	Stop Bits : 1
	Default

5. Click at Save icon 🗟. Then, click "Return" icon 🧕.

Informat	tion 🛛
2	To let the new Bank setting take effect, system will save them then restart $!!$ Continue $\ensuremath{?(Y/N)}$
	Yes No

6. Open Real time viewer again.

Create a new project	×
Enter the new name : Test_Controller	
V OK X Cancel	

7. Enter the new name for the project

Informa	tion 🛛 🕅
2	There are no tag data in the project !! Do you want to configure it ?(Y/N)
	Yes No

8. Click "No". Then, click "Add"

💱 Add A Tag		
	🔽 Auto-update the Tag contents	
Device Type: Controller	Bank: 2	Tag Name: Auto
VR18 Protocol: Controller I/O Card		Node address: 1
Linear Typ Simulate Math Operation	LogSpeed: 1 Sec 💌	Trigger: by Time
Data Byte Typen Typen	LogMethod: Instant	Tolerance:
		V OK Cancel

- Select Device type as Controller. Select Bank properly. If should show protocol: Modbus\_RS232. Enter node address same as address defined at Controller. Then, click "OK"
- 10. If there is good communication between Controller and PC, data base will be updated and it appears the following screen

🕸 Re	ealTime Configu	re						
	🖺 💭 🗙 📚	1 🔂 🔪 🖩 🖏	<b>]</b> 🕅	<b>‡</b> + →	3			
	<b>才</b> §Add	瀏 Modify	±¶Dele	te				
No.	Node Name	Tag Name	Bank	Use Conv	Node/IP	Device Type	Tag T	Data Type
	All List	PV_1	2	No	1	Controller	PV	Float
1	Controller_1	SV_1	2	No	1	Controller	SV	Float
		MV1_1	2	No	1	Controller	MV1	Float
		MV2_1	2	No	1	Controller	MV2	Float

11. If required, it is possible to add one more Controller from here

Click at "Add", then follow on screen instructions and enter node address of second controller

12. Click at Save icon 료. Then, click "Return" icon 🧕



13. Click "Yes". Then, it appears Real time screen showing digital values, bar graph, Real time trend, Real time alarms etc.

Display real-time measured val File(F) View(V) Page(P) Window(W)	lue from: C:\Program Files\DAQ Stu	dio\RealTime\`	Test_Controller.daq				
	TI STATE					<b>4</b> 3:38	3:45 PM
Event/Alarm List			🚺 Bar-Page1				
Ack Type Source 1 Login System	Active Time Clear 1 02/09/11 15:38:33	ime		400.0 400 335.0 335 270.0 270 205.0 205 140.0 140 75.0 55.0 55 120.0 55 140.0 140 205.0 55 100.0	.0         .         589.82           .0         .         524.28           .0         .         458.75           .0         .         393.21           0         .         327.68           0         .         262.14           0         .         196.60           0.0         .         131.07	655.35 . 589.82 . 524.28 . 458.75 . 393.21 . 327.68 . 262.14 . 196.60 . 131.07 . 65.53	
<ul> <li>✓ Adk.</li> <li>✓ I All</li> </ul>	Alarm Normal Ex	ent/Cleared		PV_1 5V		0.00 M¥2_1	
123 Digital-Page1			🜌 Trend-Page1				
PV_1	SV_1				1 Sec/Dot		
25.8	40.0 °C	°C					
MV1_1	MV2_1						
0.00	100.0	0	15:32:05 02/09/11	15:33:45 02/09/11 PV_1 SV	15:35:25 02/09/11	15:37:05 02/09/11 MV2_1	15:38:45 02/09/11
Page1-Page1	Sampling Rate: 1 Sec		Scan Time: 54 ms				
🛃 start 🔛 🛄 UMDAQC	🖸 DA5_Histo 🚺 ReleaseNo	Modbus	Microsoft P	谢 untitled - P	DA5_Rea	I EN 📢	🖌 🤬 3:38 PM

# 4.5.1 Modification of controller parameters in Real time

It is possible to modify max.10 parameters for a controller in Real time.

🕸 Rea	alTime Configu	re			
	😫 🗙 💭	1 🔁 🔪 🖽 🖏		) <del>*</del> + +	二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二 二
	Add	🗟 Modify	±¶D∉ <mark>Se</mark>	tup Controller	
No.	Node Name	Tag Name	Bank	Use Conv	Node/IF
	All List	Tag1	1	No	
1	Simulate_1	Tag2	1	No	
2	Simulate_2	AI1_3	1	No	192,168
3	VR18_3	AI2_3	1	No	192,168
4	Controller_4	AI3_3	1	No	192.168
		AT4 3	1	No	102 169

Fig: Design time configuration





File(F)  View(V)  Page(P)	Window(W) Language(L)	Help(H)
🗅 👌   🗟 🎕 🔳	🞛 🛛 💷 🎹 💹 🗍	🏢 🏣 🐚 🛛 🐠 R 🏚 🛢

Click at to modify controller parameters

Paramet	ter operation for	Controller:	×
C	Device Type: No.	4: Controller_4 (4100 )	/ 841) 💌
No	de address: 1		
No.	Name	Value	Target
1	SP1	40.0	C Select
2	SHIF	0.0	⊙ All
3	FILT	0.5	Read
4	РВ	10.0	💦 Write
5	ті	98	Law write
6	TD	25.0	Auto mode
7	RAMP	NONE	Manual Mode
8	SV	40.0	Reset
9	MV1	0.00	
10	MV2	100.00	👖 Close
			Normal Mode

Fig: Real time modification

# 4.6 Channel Configuration

Add IO/Recorder to the data base as explained in previous section. In Real time viewer, click on Icon Configuration data icon

	🕮 🗙 📚 🛛	🝰 📐 🗟 🖏 (	3   \$	+ + ‡				
	<b>⊋</b> ¶Add	📸 Modify	±¶D¢	lete				
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type
	All List	AII1_1	2	Yes	5/211.72.166	I/O Card	AI	Float
1	I/O Card 1	AII2_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII3_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII4_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII5 1	2	Yes	5/211.72.166	I/O Card	AI	Float
		11.11110_1			T LOAN TO AGE	NO Card	AI	Float
		AII6_1	2	Yes	5/211.72.166	I/O Card	AI	Tiuac
		-	2	Yes Yes	5/211.72.166		AI	Float

Select the required IO card in Device Type and select the Required Tag Name. Then double click on the selected Tag name, it will prompt the following screen

			Auto-update			
De	evice Type: I/O Card			_	Tag Name: 🛛	111 1
De	svice Type: 11/0 Card			<u>*</u>	ray Name, je	
	Protocol: Modbus_TCF	Use Gatew	ay:Device Node address	5	IP address : 2	11.72.166.114
Log						
	Type: Enable	¥	LogSpeed: 1 Se	c 🔽	Trigger:	by Time 💌
Da	ata Byte Type: 4 Byte	-	LogMethod: Insta	ant 💌	Tolerance:	
	Range Low: 4.00		Range High: 20.0	0	Decimal:	2 🗸
			Gain: 1		Offset:	0.0
	Unit: %		Sensor Type: Curre	ent(mA)		
Engineering Re	gister Type: Input Regi	ster 💌	Scale High: 100.00		Engineering High: 9999	99999999999
Re	gister Type: Input Regi ter Address: I Data Type: Float	ster v	Scale High: 100.00 Scale Low: 0.00		Engineering High: 9999 Engineering Low: 999	
Re Regist Event/Alarm	ter Address: 1 Data Type: Float		Scale Low: 0.00		Engineering Low: -999	9999999999999
Re Regist	ter Address: 1 Data Type: Float			No Action		
Re Regist Event/Alarm Type	ter Address: 1 Data Type: Float SetPoint	• •	Scale Low: 0.00		Engineering Low: -999	Hysteresis
Re Regist Event/Alarm Type 1 No	ter Address: 1 Data Type: Float SetPoint 0.00	No Action	Scale Low: 0.00	No Action	Engineering Low: -999	Hysteresis
Regist Event/Alarm Type 1 No 2 No	ter Address: 1 Data Type: Float SetPoint 0.00	No Action	Scale Low: 0.00	No Action No Action	Engineering Low: -999	Hysteresis 0.00

Device Type: Display channel source

Bank: Display current Bank number

Tag Name: It is to define the name for each channel in maximum 9 characters

Auto-Update: If you wish to modify Tag name and modify configuration, deselect it

Use Gateway-Device Node address: It is address of selected device type

IP address: Display current gateway IP address

Log Type: Enable/Disable

Select disable while a specific channel is not required at this time. Select enable while a specific channel is required

*Log Speed*: It is the logging speed (recording speed) of measured data. Select Log Speed column, then choose 1, 2, 5, 10, 30, 60 or 120 seconds

*Log Method*: The method of logging measured data. Select the column, and then choose the Log method of Instant, Average, Minimum or Maximum data

*Instant*: logging in the last measured data at the sampling interval *Average*: logging in averaged measured data at the sampling interval *Minimum*: logging in minimum measured data at the sampling interval *Maximum*: logging in maximum measured data at the sampling interval

Trigger: Select various types like "by time" or "by change" or disable

By Time: Data log based on Log Speed and Log Method

**By Change**: Depends on Tolerance setting. Log speed and Log Method is disabled if this option is selected and if this option is selected sampling rate is fixed at 1 sec. This option is selected to save memory in PC

If data logging is required in set log speed (fixed time interval), select Trigger as by timer.

If data logging is required only when there is change in process value, then select Trigger as by change. This will save memory

**Tolerance**: This is enabled if "by change" is selected at Trigger Type. For ex: If tolerance is set at 0.5, then if the new process value is more than or less than 0.5, then only the new sample will be logged

Data Byte Type: Choose 2 or 4 or 8 byte

**Range Low:** Range low for specific channel in selected device, ex: 4.00 mA for 8AII module

**Range High**: Range high for specific channel in selected device, Ex: 20.00 mA for 8AII module

Decimal: select one of the options - 0, 1, 2, 3 or 4

*Gain*: It is a multiplier to correct the sensor error. The correct value = (the process value + offset) x gain

Offset: It is offset value to correct the sensor error

**Unit:** The engineering unit of input

Sensor: It displays input type automatically as per the type of IO card selected

**Scale Low**: Defines the low scale with decimal if necessary. For instance, input 0-10 V, the Scale Low can be set up with value 0.00 to be correspondent to low range 0 V.

**Scale High**: Defines the high scale with decimal if necessary. For instance input 0-10 V, the Scale High can be set up with value 100.00 to be correspondent to high range 10 V.

### 4.6.1 Event

The Event is frequently used for Alarm purpose. Event can also be used for digital output DO, Timer, Totalizer, Counter or Report.

*Type*: There are various types of H, L, HH, LL, R, r or Error to be selected for job or Alarm purpose.

*H*: High limit. When the process is over high limit, the alarm or job is actuated.

*L*: Low limit. Any the process is lower than low limit, the alarm or job is actuated

*HH*: High high limit, to set up another limit higher than high limit for double warning.

LL: Low low limit, to set up another limit lower than low limit for double warning.

**R**: Increasing rate of change. The job or alarm is actuated when the rate of increasing process value is greater than the specified rate time interval. For example, when the Set point is set to 100\_1S, if the process is increasing greater than the value 100 in 1 second, then job or alarm will be actuated.

r: Decreasing rate of change. The job or alarm is actuated when the rate of decreasing process value is greater than the specified rate time interval. For example, when the Set point is set to 50\_2S if the process is decreasing greater than the value 50 in 2 seconds, then job or alarm is actuated.

*Error*: If there is error in channel input, then alarm or job is actuated

Set point: To set up the process value for actuating Job1 and /or Job2

**Job1, Job2**: When an event occurs, the task to be performed is called the job. A typical example is to trigger sound buzzer in event of high temperature. Each pen can accept five events (or alarms) and each event can create two jobs.

Various types of jobs can be selected:

### 4.6.2 Jobs

The following jobs are available for configuration to be executed on an event

*No Action*: Do nothing

Log Alarm (Auto Ack): Record alarm with acknowledgement automatically

Log Alarm: Record alarms

Log Event: Record events

Send Email: Send email if it is configured on an event

Sound Buzzer: Sound the buzzer on an event

**DO Latch On**: Set digital output / relay on, and then select Target say DO 1. The relay is latched when it is activated. Digital Output relays will be shown if digital output card is configured and available in database

**DO Latch Off**: Set digital output / relay off, and then select Target say DO 1. The relay is latched when it is activated. Digital Output relays will be shown if digital output card is configured and available in database

**DO Process**: Set digital output / relay on for process high or low, and then select Target from DO 1 to DO 6. The relay is not going to be latched when it is activated. Digital Output relays will be shown if digital output card is configured and available in database

**Enable Timer**: Start the timer, and then select Target from Timer1 to Timer 100 or all Timers

**Disable Timer**: Stop the timer, and then select Target from Timer1 to Timer 100 or all Timers

**Preset Totalz**: Start the totalizer with a preset value, and then select Target from Tolz 1 to Tolz 50. It requires configuring totalizer via tools and enabling it to appear totalizer number in the jobs after selecting Preset Totalizer

**Reset Totalz**: Reset totalizer into zero, and then select Target from Tolz 1 to Tolz 50. It requires configuring totalizer and enabling it to appear totalizer number in the jobs after selecting Preset Totalizer

**Enable Totalz**: Start the totalizer, and then select Target from Tolz 1 to Tolz 50. It requires configuring totalizer and enabling it to appear totalizer number in the jobs after selecting Preset Totalizer

**Disable Totalz**: Stop the totalizer, and then select Target from Tolz 1 to Tolz 50. It requires configuring totalizer and enabling it to appear totalizer number in the jobs after selecting Preset Totalizer

**Preset Counter**: Start the Counter with a preset value, and then select Target from Cont1 to Cont50. It requires configuring Counter via tools to appear counter number after selection of Preset counter in the jobs

**Reset Counter**: Resets the counter into zero, and then select Target from Cont1 to Cont50.

Inc Counter: Increase the counter, and then select Target from Cont1 to Cont50

**Dec Counter**: Decrease the counter, and then select Target from Cont1 to Cont50

Log Report: Make the report for Counter and Totalizer

**Reset MinMaxAve**: In Report function, after logging the MinMaxAve data of AI and Math channels for one day for example, then reset historical data in order to logging new data for the next day

**Log Message**: Log customized comments for alarm as messages on an event. A total of 100 messages available for customer customization

**Hysteresis**: To avoid job have been activated too often, option available to set for no reaction in 0.1% to 10% of full span (Low Scale to High Scale).

#### Note:

Each of the IO modules has different sampling rates. For every channel, it requires to specify the sampling rate in data acquisition software. By default DAQ will acquire data from each of the IO module with sampling rate of 1 sec. Minimum available sampling rate is 1 sec. Available options are 1, 2, 5, 10, 30, 60, 120 sec. For ex: If the logging speed is set at 10 second in Instant mode, the DAQ logs using the last of ten measured data values it acquired in last 10 sec at rate of 1 sample/sec. For the same speed in Averaging mode, the DAQ logs using the average of the ten measured data values it acquired at rate

of 1 sample/sec. For the same speed in the Maximum or Minimum mode, then the DAQ logs using the maximum or minimum of the ten measured data values it acquired at rate of 1 sample/sec.

	Sampling	Logging (historical trend)	Display (real time)
Instant	10 S	the last of 10 measured data	the last of 10 measured data
Averaged	10 S	the average of 10 measured data	the last of 10 measured data
Maximum	10 S	the maximum of 10 measured data	the last of 10 measured data
Minimum	10 S	the minimum of 10 measured data	the last of 10 measured data

### 4.6.3 Analog inputs

Add IO module to the data base as explained in previous section.

In Real time viewer, click on Icon Configuration data icon

● R	ealTime	Configur	e					
	📖 🗙 📚 🗍	🏫 🔪 🖩 🖏 🛛	<b>]</b>   =	+ + \$				
	📬 Add	🕅 Modify	±¶De	elete				
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Type
	All List	AII1_1	2	Yes	5/211.72.166	I/O Card	AI	Float
1	I/O Card 1	AII2_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII3_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII4_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII5_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII6_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII7_1	2	Yes	5/211.72.166	I/O Card	AI	Float
		AII8_1	2	Yes	5/211.72.166	I/O Card	AI	Float

Select the required IO card in Device Type and select the Required Tag Name. Then double click on the selected Tag name, it will prompt the following screen

		T Auto-update			
(	Device Type: I/O Card	Bank: 2		Tag Name: AII1	_1
	Protocol: Modbus_TCF	Use Gateway:Device Node addr	ess 5 👤	IP address : 211.	72.166.114
Log	Type: Enable	LogSpeed:	1 Sec 🔻	Trigger: by	Time 💌
	Data Byte Type: 4 Byte	LogMethod:	Instant 💌	Tolerance:	
	Range Low: 4.00	Range High:	20.00	Decimal: 2	•
		Gain:	1	Offset: 0.0	E
	Unit: %	Sensor Type: •	Current(mA)		
F	Register Type: Input Regis	ster 💌 Scale High: 100.00	0	Engineering High: 9999999	9999999.99
	Register Type: Input Regis ister Address: 1 Data Type: Float	tter ▼ Scale High: 100.00	0	Engineering High: 9999999 Engineering Low: -999999	
	ister Address: 1 Data Type: Float	Scale Low: 0.00	0		
Reg Event/Alarr	ister Address: 1 Data Type: Float	Scale Low: 0.00	0	Engineering Low: -999999	999999999.99
Reg Event/Alarr Type	ister Address: 1 Data Type: Float	Scale Low: 0.00		Engineering Low: -999999	Hysteresis
Reg Event/Alarr Type 1 No	ister Address: 1 Data Type: Float	Scale Low: 0.00	No Action	Engineering Low: -999999	Hysteresis
Reg Event/Alarr Type 1 No 2 No	ister Address: 1 Data Type: Float SetPoint 0.00 0.00	Scale Low: 0.00	No Action	Engineering Low: -999999	Hysteresis 0.00 0.00

For Analog inputs, five events are available for each channel. Maximum two jobs can be configured for each event

# 4.6.4 Digital Inputs

💱 Modify Tag Data			
	🔽 Auto-update		
Device Type: I/O Card	Bank: 2	Tag Name	: DI1_1
Protocol: Modbus_	TCP Use Gateway:Device Node address	2 🚖 IP address	: 192.168.0.112
Event/Alarm Type SetPoint	Job1	Job2	Hysteresis
1 H 🔻 Hi	Log Alarm	No Action	0
2 L 🔽 Lo	, og Alarm	No Action	0
		🗸 ок	X Cancel

For Digital inputs, two events are available for each channel. Maximum two jobs can be configured for each event

Ex: When DI1 is high, Log alarm, when DI1 is Low, Log alarm

# 4.6.5 Analog Outputs

💔 Modify Ta	ng Data		
		🔽 Auto-update	
	Device Type: I/O Card	Bank: 2	Tag Name: AOI1_2
	Protocol: Modbus_TCP 🛛 🔽 Use Gatewa	ay:Device Node address 🛛 🗧 🚖	IP address : 192.168.0.112
Log	Output: Enable		
	Range Low: 0.0	Range High: 100.0	Decimal: 1
	Expression: AII1_1+AII2_1		Sensor Type: 0-20 Current(mA)
			✓ OK X Cancel

Output: Select Enable or Disable

**Range Low**: Defines the low scale with decimal if necessary. For instance, output 0-20 mA, the Scale Low can be set up with value 0.0 to be correspondent to low range 0 mA.

**Range High**: Defines the high scale with decimal if necessary. For instance input 0-20mA, the Scale High can be set up with value 100.0 to be correspondent to high range 20mA.

*Expression*: It is possible to write a formula up to 36 characters. If user attempts to write more than 36 characters in formula, it prompt an error message indicating strings in expression should be less than 36 characters

Mathematic functions are supported and they can be used in expression while writing formula

## 4.6.6 Digital Outputs

💱 Modify Tag Data	
T Auto-update	
Device Type: I/O Card 💌 Bank: 2	Tag Name: DO1_4
Protocol: Modbus_TCP 📝 Use Gateway:Device Node address 6	IP address : 192.168.0.112
	✓ OK X Cancel

The above screen is useful to change name of tag after de-selecting auto-update. In real time, these digital outputs should be triggered by jobs defined at events.

## 4.6.6.1 DO Example

Temperature, Channel 1, Al1

When temperature, AI1 > 80 °C, then switch ON digital output1

When temperature, AI1 < 40 °C, then switch OFF digital output1

dify Ta				
		🔽 Auto-update		
	Device Type: I/O Card	Bank: 2	Y	Tag Name: RTD1_7
Log	Protocol: Modbus_TC	Use Gateway:Device Node addr	ess 3 🚖	IP address : 192.168.0.112
LUg	Type: Enable	LogSpeed:	1 Sec 💌	Trigger: by Time
	Data Byte Type: 4 Byte	LogMethod:	Instant	Tolerance:
	Range Low: -200.0	Range High:	850.0	Decimal: 1
		Gain:	1	Offset: 0.0
	Unit: C	Sensor Type:	PT100	
Engineeri	ing			
	Register Type: Input Regi	ster 💌 Scale Transformation: Disab	e 💌 Eng	ineering High: 99999999999999999999
Ri	egister Address: 1	Scale High: 850.0	Eng	gineering Low: -999999999999999999999999999999999999
	Data Type: Float	Scale Low: -200.	)	
Event/Ala Ty		Job1		Job2 Hysteresis
1 H	▼ 80.0	DO Latch On_DO1_4	No Action	0.1
2 L	40.0	DO Latch Off_DO1_4	No Action	0.1
3 No	• 0.0	No Action	No Action	0.0
4 No	• 0.0	No Action	No Action	0.0
5 No	• 0.0	No Action	No Action	0.0

# 4.6.7 Add a Math channel

In Real time viewer, click on Icon Configuration data icon 🐲

Now, click on "Add" button

RealTime Conf	igure
🗄 📖 🗙 📚	
<b>↓</b> Add	资 Modify
C1i	ck here

💱 Add A Tag				
	🔽 Aut	:o-update		
Device Type:		Bank: 2	Tag Name: Auto	
Protocol:	I/O Card Math Operation Simulate	lode address	IP address:	
			🗸 ок 🛛 🗶 с	ancel

Device type: Select Math operation

	Device Type: Math Operation	on 🔽 Bank: 2	V	Tag Name: Math1
	Protocol: Modbus_TCP	🔲 Use Gateway:Device Node addre	ess 1 主 II	address :
Log	Type: Enable	LogSpeed:	1 Sec 💌	Trigger: by Time 💌
	Data Byte Type: 2 Byte	LogMethod:	Instant 💌	Tolerance:
	Range Low: -3276.8	Range High:	3276.7	Decimal: 1
	Expression: (AII1_5+/	AII2_5)/2		
	Unit: Deg.C			
Re	gister Address: 1 Data Type: Double	Scale High:         100.0           ✓         Scale Low:         0.0	Engineeri	ng Low: -9999999999999999
		Job1	Job2	Hysteresis
Event/Ala Typ	ie Detroint		No Action	0.0
	▼ 0.0	No Action	Ino rectori	1
Тур		No Action	No Action	0.0
1 No 2 No 3 No	0.0 0.0 0.0	No Action No Action	No Action No Action	0.0
Typ 1 No 2 No	0.0	No Action	No Action	0.0

Except for Expression, it is similar to do the setting up for Analog input explained earlier. Define the Tag Name, Log Speed, Log Method, Log Speed, Trigger type, Data type, Decimal, Unit, Scale Low, Scale High, and Event. Click on data entry box, it appears Source, Operator and a keyboard. The Source covers all available Analog inputs, Math inputs, Counters and Totalizers. The Operators are Mathematic functions described below. Use Source, Operator and keyboard to define the Math equation. The Math expression / equation can be keyed in maximum 36 characters.

7	8	9	0	Cir
4	5	6	•	Back
1	2	3	-	<-
,	ж	/	+	->
(	)	۸	%	End
			~	
	4 1 ,	4 5 1 2 , * ( )	4 5 6 1 2 3 , * /	4     5     6     .       1     2     3     -       ,     *     /     +       (     )     ^     %

## **Math Expressions**

+	Addition
-	Subtraction
*	Multiplication
/	Division
SIN(x)	sin(x)
COS(x)	cos(x)
EXP(x)	e <sup>x</sup>
SQRT(x)	Square root of x
LN(x)	loge(x)
LOG(x)	log10(x)
ABS(x)	Absolute of x
POW (x,y)	x <sup>v</sup>
POW (x,y) ROUND(x)	
ROUND(x)	The closest integral number to x
ROUND(x) HI(x,y)	The closest integral number to x The bigger value between x and y
ROUND(x) HI(x,y) LO(x,y)	The closest integral number to x The bigger value between x and y The smaller value between x and y
ROUND(x) HI(x,y) LO(x,y) INV(x)	The closest integral number to x The bigger value between x and y The smaller value between x and y 1/x
ROUND(x) HI(x,y) LO(x,y) INV(x) TG(x)	The closest integral number to x The bigger value between x and y The smaller value between x and y 1/x tan(x)
ROUND(x) HI(x,y) LO(x,y) INV(x) TG(x) CTG(x)	The closest integral number to x The bigger value between x and y The smaller value between x and y 1/x tan(x) 1/tan(x)
ROUND(x) HI(x,y) LO(x,y) INV(x) TG(x) CTG(x) ASIN(x)	The closest integral number to x The bigger value between x and y The smaller value between x and y 1/x tan(x) 1/tan(x) Sin-1(x)

### 4.6.7.1 Math Example

#### **Relative Humidity – Math application**

/\*How to Calculate Relative Humidity - Theory

Requirement: Two Analog Inputs, Type: RTD AI1: To measure dry bulb temperature AI2: To measure wet bulb temperature

First calculate the saturation vapor pressure (E) for both the dry-bulb (Td) and wet-bulb (Tw) temperatures using the following equations:

Ew = 0.61078\*EXP((17.269\*Tw)/(Tw+237.3))\*(Td-Tw) Ed = 0.61078\*EXP((17.269\*Td)/(Td+237.3))\*(Td-Tw)

In the above equations the temperatures units are Celsius and the saturation vapor pressure units are milli bars. The function "EXP" is the exponential and not raising something to an exponent.

Then calculate actual vapor pressure (Ea) using the following equation: Ea =  $Ew-0.63^{*}(Td-Tw)$ 

Relative Humidity is then calculated using the following equation: RH =  $(Ea/Ed)^{*}100$ The units of relative humidity are in percent.

Here is an example of the using the equations:

Assume that your dry-bulb temperature (Td) =  $40 \,^{\circ}$ C and Wet-bulb temperature (Tw) =  $30 \,^{\circ}$ C.

Ew = 0.61078\*EXP((17.269\*Tw)/(Tw+237.3))\*(Td-Tw) Ew = 0.61078\*EXP((17.269\*30)/(30+237.3))\*(40-30) Ew = 42.4262 milli bars

Ed = 0.61078\*EXP((17.269\*Td)/(Td +237.3))\*(Td-Tw) Ed = 0.61078\*EXP((17.269 \* 40)/(40+237.3))\*(40-30) Ed = 73.7416 milli bars

Ea = Ew-0.63\*(Td-Tw) Ea = 42.4262 - 0.63\*(40-30) Ea = 36.1262 milli bars

RH = (Ea/Ed)\*100 RH = (36.1262/73.7416)\*100 RH = 48.99 %

\*/ End of Theory

DAQ support Virtual Math channels 5 Math channels are required to calculate one RH.

Td = AI1, analog input for dry bulb temperature (PT100)

Tw =Al2, analog input for wet bulb temperature (PT100)

Math1 = EXP((17.269\*Al1)/(Al1+237.3)) Math2 = Ed1 = 0.61078\*Math1\*(Al1-Al2)

Math3 = EXP((17.269\*Al2)/(Al2+237.3)) Math4 = Ew1 = 0.61078\*Math3\*(Al1-Al2)

Ea = Ew - 0.63 \* (Td - Tw)

Math5= RH1 = ((Math4-0.63\*(AI1-AI2))/Math2)\*100

Name: Math1 Expression: EXP((17.269\*AI1)/(AI1+237.3))

Name: Math2 Expression: 0.61078\*Math1\*(AI1-AI2)

Name: Math3 Expression: EXP((17.269\*AI2)/(AI2+237.3))

Name: Math4 Expression: 0.61078\*Math3\*(AI1-AI2)

Name: Math5

Expression: ((Math4-0.63\*(AI1-AI2))/Math2)\*100

Now, in Math5, you will get Relative humidity in %

Five events are supported for every Math channel and two jobs are available in every event same as Analog input channel.

Math channels are virtual channels. It contains measured value based on the equations. These values can be recorded similar to physically connected Analog inputs and display digital values, trends, bar graphs etc.

## 4.6.8 Add third party device

In Real time viewer, click on Icon Configuration data icon 🦃

Now, click on "Add" button

RealTime Conf	igure
🗄 🕮 🗙 📚	
<b>↓</b> Add	Modify
C1i	.ck here

🕪 Add A Tag			
		🔽 Auto-update the Tag contents	
Device Type:		Bank: 2	Tag Name: Auto
Protocol:	VR18 VR06 Controller I/O Card		Node address: 1
Typ	Linear Simulate Math Operation	LogSpeed: 1 Sec	Trigger: by Time
Data Byte Typ	NC200	LogMethod: Instant	Tolerance:
			V OK Cancel

Modify Ta	ag Data									_	E
	Device T	ype: Lir	ear	<b>*</b>	Bank:	2 🔻	7	Tag Name:	Tag2		
		,	dbus_R5232	_	,		7	Node address:			
Log		Туре:	Enable	V	LogSpeed:	1 Sec	•	Trigger	: by Time	•	
	Data By	te Type:	2 Byte	•	LogMethod:	Instan	t 💌	Tolerance			
	۷a	lue Low:	-3276.8		Value High:	3276.7	7	Decimal	: 1	-	
					Gain:	1.000		Offset	: 0.0		
	Regist	er Type: Unit:		ster (4xxxx) 💌	Data Type:	UINT1	6 💌	Starting Addres	s: 128	\$	
Convers	sions	Туре:	Enable	•	Engineering Low:	-1999.	9	Engineering Hig	h: 4553.6		
					RAW Low:	0		RAW Hig	h: 65535		
Event/A	larm ype	SetP	aint		Job1			Job2		/steresis	7
1 No		0.0		No Action			No Action	5002	0.0	SCOLOSIS	ſ
2 No	-	0.0		No Action			No Action		0.0		
3 No	-	0.0		No Action			No Action		0.0		1

Select "Linear" as shown above, then following screen will open

Enter all the required settings, specially address, register type, conversions etc..

Then, click "OK", click at Save icon 🗟 and return icon 🧕. If there is good communication, tag will be added and shows Real time data. If there is data mismatch, then, check Engineering and Raw settings Low and High and configure them properly

# 4.7 Display Configuration

In Real time viewer, click on Icon Configuration data icon 🐲

RealTime Conf	igure
🖶 🕮 🗙 📚	
<b>₽</b> Add	B Mc Display ± Delete
	Display Config

Click on 違 icon for display configuration

🏟 Rea	ITime Conf	igure									
	🕽 🗙 📚		8	=+	+ ‡		0				
2	Auto										
					Paç	ge1	,				
1	2	3   4	5	6	7	8	9	10   1	1   12	13	14 •
	Mode:	Enable	-		Page I	Marks:		Speed	: 1 Sec/Dot	•	
	Direction:	Horizontal	-	Page	e1			 Background	Black	•	
	Pen										
	No.	Channel		Color		Width	1	Low	High		
	1	AII1_5		Blue	-	1	-	0.00	100.00		
	2	AII2_5		Green	-	1	-	0.00	100.00		
	3	AII3_5	J	Cyan	-	1	•	0.00	100.00		
	4	AII4_5		Red	-	1	-	0.00	100.00		
	5	AII5_5		Magenta	-	1	-	0.00	100.00		
	6	AII6_5		Yellow	_	1	-	0.00	100.00		
	7	AII7_5	J	Gray	•	1	+	0.00	100.00		
	8	AII8_5		Deep Blue	-	1	-	0.00	100.00		
								<> Backwa	ard 🔶 Forw	ard	

Maximum 200 display pages available for user configuration. In each page, maximum 24 tags are allowed per page

*Mode*: This is for page enable or disable.

**Page Marks**: This is the name for specific page. Ex: Section Kiln. Maximum 38 characters are allowed

**Speed**: This is real time trend display resolution. Select one of the options in 1 sec/dot, 2 sec/dot, 5 sec/dot, 10 sec/dot, 20 sec/dot, 30 sec/dot, 1 min/dot, 5 min/dot, 10 min/dot, 10 min/page, 30 min/page, 1 hr/page, 2 hrs/page, 4 hrs/page, 8 hrs/page, day/page and week/page

If you wish to see both Real time and historical combined, then, select say day/page at the display. Then, the Real time trend in screen will be for the last 24 hrs update dynamically

*Direction*: Selects the trend direction horizontal or vertical.

Background: Defines the background color of Trend mode in black or white

**Pen**: Defines a specific channel as a drawing pen, its color, width, Display Hi and Display Low.

**Channel**: Selects a specific analog input AI or Mathematics Math, or selects Disable if a specific channel is not required.

Color: Selects the color for each pen.

*Width*: Selects the width of trend, 1-thin, 2-medium, 3-wide.

*Low*: Defines the low scale for a pen on the display.

*High*: Defines the high scale for a pen on the display.

*Forward / backward button*: It is to navigate to next/earlier 8 sets of pens for display configuration

### 4.8 Tools Configuration

In Real time viewer, click on Icon Configuration data icon

RealTime Conf	igure
🗄 🕮 🗙 📚	<b>\$ \$</b> _ + + <b>\$</b>
న Auto	Tools

Click on 🔊 icon for Tools configuration

#### 4.8.1 Timers

RealTime Configure	
Timer Counter Totalizer	
Timer1	
1 2 3 4 5 6 7 8 9 10 11 12 3	13 ••
Type: Countdown	
Time	
Day Hour Minute Sec	
Job1: No Action	
Job2: No Action	

Maximum 100 timers available for configuration (Till DAQ 1.10, total timers are 50 only). Timers increased from DAQ V1.2 onwards

Type: Countdown, Repeat Countdown, Daily, Weekly or Monthly.

*Countdown*: Defines the interval of time, e.g. days, hours, minutes and seconds. (Not Real Time clock)

Repeat Countdown: Repeats the previous countdown.

Daily, Weekly or Monthly: The timer works in selected interval of Real Time clock

Action: Disables or enables the timer.

Job1, Job2: various jobs as described in 3.6.2, 2 jobs for each timer.

## 4.8.1.1 Timer Example

Switch on water pump every day at 8.00 hrs and switch off at 10.00 hrs

This application requires to Daily type timer which works with Real Time Clock.

Configuration settings are as follows.

### Timer1

Type: DailyAction: EnableTime – Hour: 8Min: 0Sec: 0Job1: DO Latch On, Target: DO1Job2: No Action

#### Timer2

Type: Daily Action: Enable

Time – Hour: 10 Min: 0 Sec: 0 Job1: DO Latch Off, Target: DO1 Job2: No Action

RealTime Configure
Timer Counter Totalizer
Timer1
1 2 3 4 5 6 7 8 9 10 11 12 13
Type: Daily Action: Enable
Time
Hour Minute
8 🔻 0 💌
Job1: DO Latch On_DO1_4
Job2: No Action

RealTime Configure	
🖶 📖 🗙 📚   🔮 🔪 🖻 🖏 🖬	<b>↓ + + ↓ 数 0</b>
Timer Counter Totali:	zer
	Timer2
1 2 3 4 5	6 7 8 9 10 11 12 :
Type: Daily	Action: Enable
Time	
	Hour Minute
10	
,	
Job1: DO Latch Off_D	001_4
Job2: No Action	

# 4.8.2 Counters

In Real time viewer, click on Icon Configuration data icon 🐲

Click on sicon for Tools configuration and then click on "Counter" tab Maximum 100 timers available for configuration (From DAQ 1.2 onwards)

RealTime Configure	
🖶 📖 🗙 📚   🏦 🔪 🖻	
Timer Counter	Totalizer
	Counter1
1 2 3 4	5 6 7 8 9 10 11 12 13
Name: Cont1	Desc: Counter 1
numer joona	
Unit: No.	Preset: 0
Event/Alarm	
No. Type SetPoir	nt Job1 Job2
1 H 🔽 100	Log Alarm No Action
2 No 🔽 100	Log Alarm(AutoAck) No Action

Name: Defines the name of counter.

Desc: Defines the description for a specific counter on the display.

Unit: Defines the unit of counter

**Preset:** Defines the preset value for the counter. The counter starts from a preset value.

*Event:* Defines the type, set point, Job1 or Job2.

Type: Select one of three options: None, Process Hi, Process Low

Set point: Defines the set point of process value to trigger the counter.

Job1, Job2: various jobs as described in 3.6.2, 2 jobs for each counter

### 4.8.2.1 Counter Example

Supervisor wants to know the number of occurrence of an event in a day say pressure switch signal high

Digital input1 is used for Pressure switch. High signal indicates High pressure, Low signal indicates normal pressure

#### **Digital Input1**

Event1: Type: H Job1: Inc Counter, Target: Counter1

### Timer1

Type: Daily

Action: Enable

Time – Hour: 23 Job1: Log Report Job2: Reset Counter Min: 59 Sec: 59 Target: Counter1 Target: Counter1

(Reset Counter1 historical data in order to log new data for the next day)

If values meet the following conditions, DAQ will change notation from traditional to scientific

the value is more than 10<sup>5</sup> or less than 1/(10<sup>5</sup>) the value digit-length in display exceeds the allowed range

Ex: Up to 5 digits, counter displays value directly Say 0-99999. 100000 will be shown as 1E5 that means 5 zero's after 1 4294967295 will be shown as 4.29497E9 etc.

### 4.8.3 Totalizers

In Real time viewer, click on Icon Configuration data icon 🍩

Click on 🔊 icon for Tools configuration and then click on "Totalizer" tab

Maximum 50 Totalizers available for configuration

RealTime Configure	
Timer Counter Totalizer	
Totalizer 1	
1 2 3 4 5 6 7 8 9	10   11   12   13   💶
Name: Tolz1 Desc:	
Source: AII1_5   Action: Disable	Decimal: 1
Period: Sec 💌 Unit:	Preset: 0.0
Low Cut: 0.0	
_Event/Alarm	
No. Type SetPoint Job1	Job2
1 No 100.0 Log Alarm(AutoAck)	No Action
2 No 100.0 Log Alarm(AutoAck)	No Action

Name: Defines the name of the totalizer.

**Desc**: Defines the description for a specific totalizer on the display.

**Source**: Select a specific analog input or Math input to be used for totalizing.

Action: Disables or enables the totalizer.

Decimal: Defines the decimal point for the totalizer.

Period: Selects second, minute or hour used for the totalizer.

Unit: Defines the unit of totalizing

**Preset**: Defines the preset value for the totalizer. The totalizer starts from a preset value.

Low Cut: If Source channel has below this setting, then value is skipped from Totalizing

*Event*: Defines the type, set point, Job1 or Job2.

Type: Select one of three options: None, Process Hi, Process Low

**Set point**: Defines the set point of process value to trigger the totalizer.

Job1, Job2: various jobs as described in 3.6.2, 2 jobs for each totalizer.

## 4.8.3.1 Totalizer Example

Water flow rate is in M<sup>3</sup>/Sec. Supervisor want to know about total water discharged and want this information daily, weekly and monthly reports

## Totalizer1

Source: Al1 Action: Enable Decimal: 1 Period: Sec Unit: Cub.Mtr Preset: 0.0

## Timer1

Type: Daily Time – Hour: 23 Job1: Log Report Job2: Reset Totalizer Action: Enable Min: 59 Sec: 59 Target: Totalizer1 Target: Totalizer1

Reset Totalizer1 historical data in order to log new data for the next day

## 4.9 Comments

In Real time viewer, click on Icon Configuration data icon

😫 RealTime C	onfigure	
🖶 📖 🗙 🎖	> 🛛 🕰 🔪 🖉	◙ ‰(□) ≠ + + ≠   ﷺ ◙
Timer	Counter	

Click on 🗔 icon for Comments configuration

100 messages available for display of customized alarms

Maximum 50 characters are allowed in each message and these comments can be assigned as Job function "Log message" in events at the Analog/Digital/Math channel configuration

Ex: Message1 = Tank TK101 level High

🕸 Rea	alTime Configure
	📖 🗙 🖕 🔝 🔜 🚷 🔳 🛛 ‡ + + ‡ 🛛 💸 🔟
R	Modify
No.	Content
1	Message1
2	Message2
3	Message3
4	Message4
5	Message5
6	Message6
7	Message7
8	Message8
9	Message9
10	Message10

🕸 Rea	alTime Configure
	🕮 🗙 📚 🛛 🏩 💊 🗷 🕼
3	Modify
No.	Content
1	Tank TK101 Level High
2	Message2
3	Message3
4	Message4
5	Message5

			🔽 Auto-update			
	Device Type: I/O Card	Ţ	Bank: 2	Y	Tag Name:	AII1_5
	Protocol: Modbus_TCP	🔽 Use Ga	ateway:Device Node addres:	5 🚖	IP address :	192.168.0.112
Log	Type: Enable	Y	LogSpeed: 1	Sec 💌	Trigger	: by Time
	Data Byte Type: 4 Byte	-	LogMethod: In	stant 💌	Tolerance	:
	Range Low: 4.00		Range High: 20	.00	Decimal	l: 2 💌
			Gain: 1		Offset	:: 0.0
Engineerin	-	ter J Scal	Sensor Type: Cu	rrent(mA)	Engineering High:	99999999999999
-	,	ter 💌 Scal	Sensor Type: Cu e Transformation: Disable Scale High: 100.00 Scale Low: 0.00	rrent(mA)	Engineering High: 9 Engineering Low: -9	
Reg Event/Alar	g Register Type: Input Regis gister Address: 1 Data Type: Float	•	e Transformation: Disable Scale High: 100.00 Scale Low: 0.00	rrent(mA)	Engineering Low:	999999999999999999999999999
Reg Event/Alar Typ	g Register Type: Input Regis jister Address: I Data Type: Float m e SetPoint		e Transformation: Disable Scale High: 100.00	×	Engineering Lows	99999999999999999999999999999999999999
Reg Event/Alar	g Register Type: Input Regis gister Address: 1 Data Type: Float	•	e Transformation: Disable Scale High: 100.00 Scale Low: 0.00 Job1	(Log Message No Action	Engineering Lows	999999999999999999999999999
Event/Alar Typ	g Register Type: Input Regis jister Address: I Data Type: Float m e SetPoint 80.0	Log Alarm	e Transformation: Disable Scale High: 100.00 Scale Low: 0.00 Job1	Log Message	Engineering Lows	Hysteresis
Event/Alar Typ 1 H 2 No	g Register Type: Input Regis jister Address: 1 Deta Type: Float m e SetPoint i 80.0 i 0.00	Log Alarm	e Transformation: Disable Scale High: 100.00 Scale Low: 0.00 Job1	Log Message	Engineering Lows	Hysteresis 0.00

# 4.10 Project Auto configure

In Real time viewer, click on Icon Configuration data icon



Click on 🗱 icon for "Project auto configure"

If RS232 is selected in the Bank, then if all the IO modules are connected in RS485 network, then it is possible to acquire data base of all the IO modules specifying start and end address of IO modules using Project auto configure function

😻 Auto-configuration	
Device Type: I/O Card	Bank: 1
Protocol: Modbus_R5232	🔽 Auto-update
Node address	
From: 1	To: 10 🚖
	Cancel

Device type: Select IO card for addition of IO modules into network

**Bank:** Select bank from 1 to 4 as per bank configuration

*Auto-update*: Select if it is required to acquire data base of IO modules and give tag name for the channels automatically

From: Start address of IO module

To: End address of IO module

Click on "OK" to add all the IO modules into network configuration

If Ethernet is selected in the Bank, then it requires IP address of the Gateway and address of each of the IO module to add new IO module each time.

Note: Provision is not available to enter range of IO modules like RS232/RS485

😻 Auto-configuration	
Device Type: I/O Card	Bank: 2
TP address Example : 192.168.0.111 IP List:	< Please key in IP here and then press '+' button to add it to the IP list . + - - - - Please select one IP form IP List and then press '-' button to remove it .
Use Gateway:Device Node address	✓ OK X Cancel

Device type: Select IO card for addition of IO modules into network

Bank: Select bank from 1 to 4 as per bank configuration

*IP address*: IP address of the gateway say PC-E converter. May be all the IO modules are connected to PC-E via RS485

Device Node address: Address of slave device to be added to network

## 4.11 Option

In Real time viewer, click on Icon Configuration data icon 🀲



Click on 🕮	icon to configure options
------------	---------------------------

# 4.11.1 Share

In Real time viewer, click on Icon Configuration data icon

Click on icon to configure options, then select "Share" tab

💔 Opti	on	
Share	Email Communication Auto-page	
	C Do not share	
	Share data so other people can read it	
	🗸 ок	🗙 Cancel

Share/do not share options are available for user selection. If share option is selected, then historical data available in the computer can be shared from other computers. On selection of this share data, shared folder will be created and following message will be shown

Informa	tion 🔀
(į)	'C:\Data Acquisition Studio\RealTime' Share-folder created !!
	ок

For example, you have some Modbus slaves like IO module, recorder etc. 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:\Data Acquisition Studio through network configuration. This will minimize the data transfer between Modbus slaves and the computers and make it more efficient by using available resources through network configurations.

## 4.11.2 Email

This is to send email on an event like alarm

In Real time viewer, click on Icon Configuration data icon 🍩

Click on icon to configure options, then select "Email" tab

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.

💔 Ор	tion	
Share	Email	Communication Auto-page
Ple	ase fill in I	the blanks so the email function can be activated
	MTP Serv	er
	Hos	t: company.com
	Port	:: 25
	User	: John
Email Address		
	Sende	r: sales@company.com
	Receive	r: service@company.com +
		·
		,
		OK X Cancel

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)

In case, email is successful, it delivers as follows

Туре:		HiAlarm
Source:		Tag1
ActiveTime:	05/08/09,	13:31:04
Value:		50
Comment:		Levelhigh

If Email is failed to deliver, then it prompts the following error message. In this case, it requires checking all the email settings


# 4.11.3 Communication

In Real time viewer, click on Icon Configuration data icon 🍩

Click on icon to configure options, then select "Communication" tab

💔 Option		
Share Email	Communication Auto-page	
Sar	npling Rate: 105 TimeOut: 30 文 Sec	

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

1 S	-
1 S	
2 S	
5 S	
10 S	
30 S	
60 S	
120 S	

*Time out*: This is time set for generating time out errors related to real time viewer communication.

For example, if IO modules and PC with data acquisition software are located at different places connected through Ethernet across different gateways, and then user can adjust sampling rate and time out settings to avoid errors in communication. When real time viewer is running, please observe the following taskbar at the bottom side of the screen.

Page1	Sampling Rate: 1 Sec	Scan time: 4 ms
-------	----------------------	-----------------

Here, scan time should always be less than sampling rate. Other wise, communication errors will occur. If PC and Modbus slave devices are connected by long distance network, then there might be chances that scan time gets increased. So check this and set sampling-rate more than scan time. Also user can set time out settings to generate communication failure errors. Maximum time out settings possible is 60 sec.

For example, scan time is adjusted and time out setting = 30 sec. This means, if scan time is more than sampling rate for more than 30 sec, then communication errors will be generated.

# 4.11.4 Auto-Page

In Real time viewer, click on Icon Configuration data icon 🚳

Click on icon to configure options, then select "Auto-Page" tab

💔 Option			
Share Email	Communication	Auto-page	
	Action Ena		3

This function is to rotate pages at set time interval

Action: Enable, Disable options are available

Interval: This is time interval and max. 60 sec. is possible

If this option is enabled and time is set, then, display pages in Real Time Viewer will be rotated cyclically as per set time

## 4.12 Print Configuration

It is possible to print channel configuration, Display configuration, Tools (Timers, Counter, and Totalizers) configuration and comments setup

RealTime Configure								
	Add Print	📸 Modify	<b>±</b> ¶De	lete				
No.	Device Type	Tag Name	Bank	Use Gateway	Node/IP	Device Type	Tag Type	Data Typ
	All List	DI1_1	2	Yes	2 / 192.168.0.112	I/O Card	DI	Bit/Bool
1	I/O Card_1	DI2_1	2	Yes	2/192.168.0.112	I/O Card	DI	Bit/Bool
2	I/O Card_4	DI3_1	2	Yes	2 / 192.168.0.112	I/O Card	DI	Bit/Bool
3	I/O Card_5	DI4_1	2	Yes	2/192.168.0.112	I/O Card	DI	Bit/Bool
4	I/O Card_7	DI5_1	2	Yes	2/192.168.0.112	I/O Card	DI	Bit/Bool
5	Math Operatio	DI6_1	2	Yes	2 / 192.168.0.112	I/O Card	DI	Bit/Bool

Select the required and then click on Print icon

For Counters and Totalizers, maximum 4 channels can be printed at one command. Select the starting counter number say 1, then you can print configuration of Counter 1 to Counter4. If you select Counter 3, then you can print configuration of Counter 3 to Counter 7

😻 Report Preview	
File Page Zoom	
🔁 🔚 🥩 🛤 🔺 🕨 🍽 Page 🛛	of 3   🔍 🔍 🗈 🖹 Zoom 1 30.0 %   🖥

Save: 🖥 this is to save report configuration. Format of files is Rave snap shot (.ndr). You may download any .ndr viewer from internet

Print: Main this is to take print out of selected configuration file

Exit Ethis is to exit print viewer

			of 2   🤻 🔍 📭 🖻 Zoom 💷 🥬			
Pro	oject: Test1		Tin	ner Config	uration	Date/Time: 05/11/09 09:43:10
limer		Туре	Time	Job1	Job:	2 Action
1	Daily		0 Day 8 Hour 0 N	linute 1 Sec		
			DO Latch On_DO1_4		No Action	Enable
2	Daily		0 Day 10 Hour 0	Minute 1 Sec		
			DO Latch Off_DO1_4		No Action	Enable
3	Countdown		0 Day 0 Hour 0 N	linute 1 Sec		
	a		No Action		No Action	Disable
4	Countdown		0 Day 0 Hour 0 N	linute 1 Sec		Disable
5	Countdown		No Action	Carda d Cara	No Action	Disable
2	Countdown		0 Day 0 Hour 0 No No Action	inute 1 Sec	No Action	Disable
6	Countdown		0 Day 0 Hour 0 N	linute 1 Sec	No Action	Disable
0	coantdown		No Action	ander 2 bee	No Action	Disable
7	Countdown		0 Day 0 Hour 0 M	linute 1 Sec		District
			No Action		No Action	Disable
8	Countdown		0 Day 0 Hour 0 M	linute 1 Sec		
			No Action		No Action	Disable
9	Countdown		0 Day 0 Hour 0 N	linute 1 Sec		
			No Action		No Action	Disable
10	Countdown		0 Day 0 Hour 0 N	linute 1 Sec		

			2001	n In (+)										
Pr	oject: Test	í.					Tag	Conf	igurat	ion		Date	/Time: 05/11/09	10:04:57
No. Tag Nan	Bank ne Us	Node/II e Gateway	Device Typ	ag Typ e	e Data Type	EngHi	Unit EngLo	Speed Decimal	Alarm: Method	l SP1	Alarm2 SP2	Alarm3 SP3	Alarm4 SP4	Alarm5 SP5
1	2	2 / 192.168.0		DI		1		1 Sec	н		L	No	No	No
DI1_1		Yes	I/O Card	-	Bit/Bool	6	0		Instant	1	0			
2 DI2_1	2	2 / 192.168.0 Yes	I/O Card	DI	Bit/Bool	1	0	1 Sec	No Instant		No	No	No	No
3	2	2 / 192.168.		DI	DIQDOOI	1	0	1 Sec	No		No	No	No	No
DI3_1		Yes	I/O Card		Bit/Bool		0		Instant					
4	2	2 / 192.168.0		DI	10.000 M	1		1 Sec	No		No	No	No	No
DI4_1	2	Yes	I/O Card		Bit/Bool	8	0	1.2	Instant					
5 DI5 1	2	2 / 192.168.0 Yes	J.112 I/O Card	DI	Bit/Bool	1	0	1 Sec	No Instant		No	No	No	No
6	2	2 / 192.168.0		DI	DIVDUU	1	U	1 Sec	No		No	No	No	No
DI6 1	-	Yes	I/O Card	01	Bit/Bool	-	0	1 000	Instant			140	140	140
7	2	2 / 192.168.0		DI		1		1 Sec	No		No	No	No	No
DI7_1		Yes	I/O Card		Bit/Bool		0		Instant					
8	2	2 / 192.168.0		DI		1		1 Sec	No		No	No	No	No
DI8_1 9		Yes 2 / 192.168.0	I/O Card	DI	Bit/Bool		0	1.500	Instant		NIA	No	Na	A la l
9 DI9_1	2	2 / 192.168.0 Yes	I/O Card	DI	Bit/Bool	1	0	1 Sec	No Instant		No	No	No	No
10	2	2 / 192.168.		DI	DIQDOOI	1	~	1 Sec	No		No	No	No	No
DI10_1		Yes	I/O Card		Bit/Bool		0	1000	Instant					
11	2	2 / 192.168.0		DI		1		1 Sec	No		No	No	No	No
DI11_1		Yes	I/O Card		Bit/Bool		0		Instant					
12 DI12_1	2	2 / 192.168.0 Yes		DI	Bit/Bool	1	0	1 Sec	No Instant		No	No	No	No
13	2	2 / 192.168.0	I/O Card	DI	DIVBOOI	1	U	1 Sec	Instant No		No	No	No	No
DI13_1	2	Yes	I/O Card	U1	Bit/Bool	1	0	1 360	Instant		145	140	140	140
14	2	2 / 192.168.0		DI		1		1 Sec	No		No	No	No	No
DI14_1		Yes	I/O Card		Bit/Bool		0		Instant					
15	2	2 / 192.168.0		DI		1		1 Sec	No		No	No	No	No
DI15_1		Yes	I/O Card	-	Bit/Bool		0		Instant					
16	2	2 / 192.168.0	J.112	DI		1		1 Sec	No		No	No	No	No

🎯   🔍 ◀ ▶ ▶  Page 1 of 3   🍳 🥞 📴		
Project: Test1	Comment Configuration	Date/Time:05/
No. Content		
1         Tark TK101Level High           2         Message3           3         Message4           4         Message5           6         Message6           7         Message7           8         Message7           9         Message7           9         Message7           11         Message10           12         Message11           12         Message12           13         Message13           14         Message14           15         Message15           16         Message17           18         Message19           19         Message11           12         Message12           23         Message20           21         Message21           23         Message21           24         Message22           23         Message24           25         Message25           26         Message27           27         Message28           29         Message29           29         Message29           29         Message20 <th></th> <th></th>		

# 4.13 Backup

# 4.13.1 Project and Data backup

By default, project configuration and data files will be stored at the path

C:\Data Acquisition Studio\RealTime\XXX

Where XXX is project name

If you need to store data in another drive, then it has to be selected during installation of data acquisition software

Choose Destination Loca	tion 🛛 🔀
	Destination Folder C:/Data Acquisition Studio
	Choose Folder
	C:\ Data Acquisition Studio Documents and Settings KAV Observerll
<b>X</b>	Driver Selection
🔶 <u>B</u> ack	▶ <u>N</u> ext ∑ancel

For ex: Name of Project: BottlingPlant

Then, when you create a new project, the following files will be created



Take BACKUP of C:\Data Acquisition Studio\RealTime regularly and store in safe place.

## 4.13.2 Restoring Project with Data

Install Data acquisition software

Copy Realtime folder to C:\Data Acquisition Studio

Open the project from data acquisition software

Start-Programs-RealTime viewer

# 4.13.3 Sending Project files

In case of any problems in configuration, if you wish to send project files, zip RealTime folder available at C:\Data Acquisition Studio except <u>data files</u> and send it to us

If project is running for few days, then RealTime folder may become big size with large storage data. If it is more data, it is difficult to send project files with data by Email. So, before sending project configuration files, you may need to take out large data files first and then send only configuration files. You may first copy total RealTime folder to your desktop, and then remove the data files from RealTime folder at your desktop such that it will contain only configuration files. Then, zip Realtime folder and send it to us

# 5. Real Time Viewer

It is to view Real time data from slave devices in PC. USB license key is required to run DAQ in PC for more than 1 hr.

File(F)	View(V)	Page(P)	Window(W) Languag	age(L) Help(H)	
	👌 🛛 🖽	) 🌼 🔳		👿 📗 🋅 🐚 🖗 R 🏦 🛽	

Belect page (Choice)

New project or close existing project



Configuration data

Display measured data (Historical).

# 0

When Real time viewer is running in PC, it stores data in PC at path C:\Program files\DAQ Studio\Real time\Project.daq. Icon is used to archive this historical data. This is similar to historical data stored at devices like Recorders, HMI etc. but not exactly same

Arrange all (Show default screen layout-mix-digital values, bar graph, trends, Alarm page)

Display Events/Alarms list

💹 Display Digital Values

- 🋄 Display Bar graph
- 🚾 Display Trend
- Display all channel Digital
- Example 2 Check status of Counters, Digital inputs, Digital Outputs etc.

R To setup Paperless Recorder

Parameters operate for Controllers. Please check section "Create a new project for Controllers" for more information about this

# 5.1 Opening project

If it is a new project, refer earlier section and create a new project. If it is existing project, open the project by selecting appropriate path

If communication is established between PC and Modbus Slave devices over the selected bank, then after opening Real time viewer. By default the following screen will appear which shows all the components like Events/Alarm list, Bar graphs, Digital values and Trends

## 5.1.1 Display Arrange All

💔 Display real-time n	neasured value from: C:\Data Acquisition S
File(F)  View(V)  Page(P)	Window(W) Language(L) Help(H)
📄 👌 🛱 🏶 🔳	田 📗 🖾 🎬 🚾 🛯 🏭 🎆 👘

Click on  $\textcircled$  icon to display Digital values, trends, bar graph & events/alarm list in one screen. Each of the above will be shown in separate windows, alternatively, in Menu click on "Window" and then click on 'Arrange All"



	/Alarm List	▋▓፼▏▓▓▓▏▓			Bar-Page1							
	Type Source	Active Time	Clear Time	Value/Content	1000.0							
	Login System	05/08/09 15:56:44	Clear rime	value/content	>							П'
	HiAlarm Tag1 HiHiAlarm Tag1	05/08/09 15:58:19 05/08/09 15:58:19		993.1 993.1								
	LoAlarm Tag1	05/08/09 16:03:21		103.8								
	LoLoAlarm Tag1	05/08/09 16:03:47		19.9	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	
								2100.0		2300.0		2
					1							
										1	11	
					-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	1
				2	Tag1			Tag4	TagS	Тадб		Тас
~/ A0		Alarm Normal	Event/Cleared		Tag9	Tag10	Tag11	Tag12		Tag14		
Digital	k <b>√{i</b> Al			🗙	Tag9		Tag11			Tag14	Tag15	
Digital		Alarm Normal	Tag3	<b>- - X</b>	Ļ		Tagl1	Tag12 1 Sec		Tag14	Tag15	
Digital 1	I-Page1	1.62	Tag3		Ļ		Tag11			Tag14	Tag15	Tag
Digital	I-Page1	1092			Ļ		Tag11			Tagl4	Tag15	
Digital 1 4	I-Page1 <b>221,6</b>	1492 221.5	Tag3	221.6	Ļ		Tagli			Tagl4	Tag15	
Digital 1 4	I-Page1 <b>221,6</b>	<sup>142</sup> 221.6 <sup>145</sup> 221.6	Tag3	221.6	Ļ		Tag11			Tagl4	Tag15	
Digital 1 4	221.6 221.6 221.6 221.6	Tage 221.6 7221.6 7221.6 7498 221.6 7491	Tag3	221.6 221.6 221.6	Ļ		Tag11			Tag14	Tag15	
	Page1 221.6 221.6	2221.6 2221.6 <sup>7498</sup> 2221.6	Tag5	221.6 221.6	Ļ		Tag11			Tag14	Tag15	
Digital	221.6 221.6 221.6 221.6 221.6 221.6	142 221.6 142 221.6 Tag0 221.6 Tag11 221.6 Tag14	Tag5	221.6 221.6 221.6 221.6	Ļ		Tag11			Tag14	Tag15	
)igital t 7	221.6 221.6 221.6 221.6	1490 221.6 1490 221.6 1491 221.6	Tag3 Tag6 Tag9 Tag12	221.6 221.6 221.6	Trend-Pag			1 Sec	Dot			
)igital t 7	1Page1 221.6 221.6 221.6 221.6 221.6	142 221.6 142 221.6 Tag0 221.6 Tag11 221.6 Tag14	Tag3 Tag6 Tag9 Tag12	221.6 221.6 221.6 221.6	57.46 08/99		16:01:06 57(6)(79		Dot		Tag15	

# 5.1.2 Display Events

Click on Event Icon  $\fbox$  to show events in full page, alternatively, in Menu click on "Window" and then click on "Event"

20 Display real time.	measured value from: C:\Data Acquisition S
	) Window(W) Language(L) Help(H)
📄 👌 🗟 🖩	1 🖪 📗 💹 🏭 💹 🛄 🏢 🚳 🕸
8N -	
😻 Display real-time m	easured value from: C:
File(F) View(V) Page(P)	Window(W) Language(L)
🖹 👌 🗟 📾	Trend
123 Digital-Page1	Har Bar
	123 Digital
Tag1	iIII Event
	🖶 Arrange all
	III channel digital
	Status

💔 Disp	🔋 Display real-time measured value from: C:\Data Acquisition Studio\RealTime\Demo1.prj							
File(F)	File(F) View(V) Page(P) Window(W) Language(L) Help(H)							
🗅 🖻	🗅 🙈    🚍 🍩 🔳 🖽    🛄 🕎 🏙 🔛    🏙 🖿    🍪 👘							
Eve	nt/Alarm List	E	vent					
Ack	Туре	Source	Active Time	Clear Time	Value/Content			
1	Login	System	05/08/09 15:56:44					
2 E	HiAlarm	Tag1	05/08/09 15:58:19		993.1			
3 E	HiHiAlarm	Tag1	05/08/09 15:58:19		993.1			
4 [	] LoAlarm	Tag1	05/08/09 16:03:21		103.8			
5 C	5 🗖 LoLoAlarm Tag1 05/08/09 16:03:47 19.9							
- 🗸 Ad	< 🗸 🗸	Alarm	Normal Event/Cleared					

It displays the Ack (acknowledgement), Type, Source, Active time, Clear time and Value of events or alarms. Use scroll bar to move downward or upward. Press **Ack button** to acknowledge the alarm. Events do not need to be acknowledged.

On the Event / Alarm List, three different colors indicate the status of the alarm.



Red - Presently in alarm status

Normal returned To normal

Green - The cause of alarm status was temporary, and has now

Event/Cleared Grey – A temporary alarm (in green status), after having been Acknowledged, and then becomes grey.



Active Time is the time that alarm status becomes active. Clear Time is the time when two conditions are met. Firstly alarm status is cleared and becomes normal, and secondly the user has acknowledged it. If any alarm occurs, the red buzzer icon on the top right starts to flash. After the cause of alarm is no longer met and the alarm is acknowledged, then the red buzzer icon disappears. When Clear Time shows **Terminated** this indicates that turning off the power has terminated the alarm.

# 5.1.3 Display Digital Values

😻 Display real-time measured value from: C:\Data Acquisition S						
File(F) View(V) Page(P)	Window(W) Language(L) Help(H)					
📄 🚵 🗍 🛱 🍪 🔳	🗄 🛛 🖾 🎬 🚾 🛛 🎆 🛅 🚳 👘					

Click on Digital Icon 🖾 to show all digital values in full screen, alternatively, in Menu click on "Window" and then click on "Digital". Maximum 24 channels can be displayed in each page and total 200 display pages available

😻 Display real-time measured value from: C							
File(F) View(V) Page(P)	Window(W) Language(L)						
🖹 👌 🗒 🗰	Trend						
123 Digital-Page1	Bar						
Tag1	123 Digital						
lagi	Event						
	🖶 Arrange all						
	All channel digital						
	Status						

🕒 🧀 📈 🖓 Digital-Page1							4:13:06 PM
ag1	Digital	Tag2			Tag3		
	924.2		924.2			924.2	
ag4		% <mark>Tag5</mark>			Tag6		
	924.2		924.2			924.2	
ag7		Tag8			Tag9		
	924.2		924.2			924.2	
ag10		Tag11			Tag12		
	924.2		924.2			924.2	
		Tag14			Tag15		
			924.2			924.2	
ag16							
			924.2				
e1-Page1	Sampling Rate: 1 Sec		Scan Time: 1 ms				
🖥 start 💦	🔯 UMDAS - Microsoft 🛛 🛃 Recorder_ENU - M	🔁 VR18 Manual V2.3P	. 🦉 untitled - Paint	y untitled - Paint	😵 Real_Time_Viewar	😂 V2.36	🔦 🖻 Ҟ - 4:13 P

• Note: Back ground color for each channel depends on display configuration as shown attached

		· [a]  ) 🔶 🔶 🔶	•    🕑 🔟			
💦 Auto						
			Page1			
2	3 4 5	5   6   7	8 9	10	11   12	13   14 <u>•</u>
ŋ	Mode: Enable	▼ F	Page Marks:		Speed: 1 Sec/E	Dot 🔻
	ction: Horizontal	▼ Page1			ground: Black	•
Pen	cuon. Honzontai			Dauk	ground, jelack	
No.	Channel	Color	Width	Low	High	
1	Tag1 💌	Blue	• 1 •	-120.0	1000.0	
2	Tag2 💌	Green	• 1 •	-120.0	1100.0	
3	Tag3 💽	Cyan	• 1 •	-120.0	1200.0	
_	Taq4 🔻	Red	• 1 •	-120.0	1300.0	
4						_
	Tag5	Magenta	<u> </u>	-120.0	1400.0	
4		Magenta	• 1 • • 1 •	-120.0	1400.0	-
4	Tag5			1		_

# 5.1.4 Display Bar Graphs



Click on Bar Icon it to show Bar graphs in full screen, alternatively, in Menu click on "Window" and then click on "Bar". Maximum 24 channels can be displayed in each page and total 200 display pages available



🏶 Display real-t	ime measured value fror	n: C:\Data Acquisition Stud	io\RealTime\Demo1.prj				
	age(P) Window(W) Langua;						
🗋 👌 🗟 🕯	) 🖩 🖽 🛛 🔜 🛄 I	🗷 🖩 🏙 🚳 🕀					4:25:10 PM
🚺 Bar-Page1							
1000.0	1100.0	1200.0	1300.0	1400.0	1600.0	1600.0	1700.0
888.0	978.0	1068.0	1158.0	1248.0	1428.0	1428.0	1518.0
776.0	856.0	936.0	1016.0	1096.0	1256.0	1256.0	1336.0
664.0	734.0	804.0	874.0	944.0	1084.0	1084.0	1154.0
552.0	612.0	672.0	732.0	792.0	912.0	912.0	972.0
440.0	490.0	540.0	590.0	640.0	740.0	740.0	790.0
328.0	368.0	408.0	448.0	488.0	568.0	568.0	608.0
216.0	246.0	276.0	306.0	336.0	396.0	396.0	426.0
104.0	124.0	144.0	164.0	184.0	224.0	224.0	244.0
-8.0	2.0	12.0	22.0	32.0	52.0	52.0	62.0
-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0
1800.0	1900.0	2000.0	2100.0	2200.0	2300.0	2400.0	2500.0
1608.0	1698.0	1788.0	1878.0	1968.0	2058.0	2148.0	2238.0
1416.0	1496.0	1576.0	1656.0	1736.0	1816.0	1896.0	1976.0
1224.0	1294.0	1364.0	1434.0	1504.0	1574.0	1644.0	1714.0
1032.0	1092.0	1152.0	1212.0	1272.0	1332.0	1392.0	1452.0
840.0	890.0	940.0	990.0	1040.0	1090.0	1140.0	1190.0
648.0	688.0	728.0	768.0	808.0	848.0	888.0	928.0
456.0	486.0	516.0	546.0	576.0	606.0	636.0	666.0
264.0	284.0	304.0	324.0	344.0	364.0	384.0	404.0
72.0	82.0	92.0	102.0	112.0	122.0	132.0	142.0
-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0	-120.0
Tag1		Tag3	Tag4	TagS	Tag6	Tag7	Tag8
Tag9	Tag10	Tag11	Tag12	Tag13	Tag14	Tag15	Tag16
ge1-Page1		Sampling Rate: 1 Sec	Scan			-	
🛃 start 🔰	📓 UMDAS - Microsoft W	Recorder_ENU - Micr	🔁 VR18 Manual V2.3P.p	🦉 untitled - Paint	😵 Real_Time_Viewer	😂 V2.36	🔇 🔀 K 🛛 4:25 PI

• Note: Fill color in graph and display range for each channel depends on display configuration

# 5.1.5 Display Real Time Trends



Click on Trends Icon is to show Real Time Trends in full screen, alternatively, in Menu click on "Window" and then click on "Trend". Maximum 24 channels can be displayed in each page and total 200 display pages available





• Note: Trend color and trend width for each channel depends on display configuration

# 5.1.6 Display All Channel Digital



Click on All Channel Digital Icon it to show all channels as digital values in full page, alternatively, in Menu click on "Window" and then click on "All Channels Digital"

😵 Display real-time measured value from: C						
File(F)	View(V)	Page(P)	Win	idow(W)	Language(L)	
	À 🛛 🛱	🌼 🔳	<b>*</b>	Trend		
		-	Bar			
Ev	ent/Alaı	m List	123 Digital			
Ack	Туре			Event		
1	Logir	า		Arrange	all	
2	Com	mError		All chann	el digital	
3		mError		Status		
4	Com	mError	:::::::			

# 5.1.7 Display Counter & Totalizers

💔 Display real-time m	easured value from: C:\Data Acquisition S
File(F) View(V) Page(P)	Window(W) Language(L) Help(H)
📄 👌 🛱 🏶 🔳	🗄 🛛 💹 🎬 🚟 🗍 🏭 🎁 🖗 🕸

Click on Status Icon , alternatively, in Menu click on "Window" and then click on "Status", and then click on tab "Tools" to show status of Counters & Totalizers. It display status of all 50 counters and 50 Totalizers. If IO cards are available in network, then other tabs with name "Tools" appear under status and they displays status of Digital Inputs, Counters, Digital Outputs based on selected IO card in the network

😻 Display real-time measured value from: C							
File(F) Vi	ew(V) P	age(P)	Wir	ndow(W)	Language(L)		
🗋 🖻	<b>H</b>	È 🖬		Trend			
Tools	Tools	To		Bar			
TUUIS	TUUIS		123	Digital			
No.	Name		_	Event			
1	Cont1			Arrange	all		
2	Cont2			All chann	el digital		
3	Cont3		1	Status	-		
4	Cont4						

89 D	😵 Display real-time measured value from: C:\Data Acquisition Studio\RealTime\Test1							
File(F	File(F) View(V) Page(P) Window(W) Language(L) Help(H)							
	Tools							
No	. Name	Value		Desc				
1	Cont1	0 No.		Counter 1				
2	Cont2	0						
3	Cont3	0						
4	Cont4	Q						
5	Cont5	0 O						
6	Cont6	0						
7	Cont7	0						
8	Cont8	0						
9	Cont9	0						
10	Cont10	0						
			Status of					
	Status of 50 counters Digital Outputs and 50 Totalizers							
	This tab is	$\mathbf{A}$						
	always visible by	Status of	Digital					
	default	Inputs & (						
		(IO cards)	)					

If you wish to see Counter and Totalizer value as channels in main pages, then they can be selected in Math channel and then select specific Math channel in Display pages configuration as shown attached

Input: Cont1							
Source:	Operator:	_	7	8	9	0	Cir
Cont2 Cont3 Cont4	COS EXP SQRT		4	5	6	•	Back
Cont5 Cont6 = Cont7	LN LOG ABS	≣	1	2	3	-	<-
Cont8 Cont9 Cont10	POW ROUND HI	_	,	*	/	+	->
Cont11 Cont12	LO INV	~	(	)	*	%	End

	De	vice Type: M	ath Operation 🖉	Bank: 2	-	Tag Name: Math1	
		Protocol: Mo	dbus_TCP 🔲 Use	e Gateway:Device Node address	1	IP address :	1
Lo	g						-
		Type:	Enable	LogSpeed: 1 Sec	· _	Trigger: by Time	
	Da	ata Byte Type:	8 Byte 💌	LogMethod: Insta	nt 💌	Tolerance:	
		Range Low:	-99999999999999999999	Range High: 99999	999999999999.9	Decimal: 1	
		Expression:	Cont1				
		Unit:	Deg.C	Select Counter/	Totalizer he	ere	
	Reg	gister Type: I	nput Register 🔻	Scale Transformation: Enable	•	Engineering High: 99999999999999999	
	Regist	gister Type: 1 er Address: 1 Data Type: 0		Scale Transformation: Enable Scale High: 100.0 Scale Low: 0.0	<b>•</b>	Engineering High: 999999999999999999999999999999999999	
Εv	Regist	er Address: 1		Scale High: 100.0			is
	Regist ent/Alarm <sup></sup>	er Address: 1 Data Type: D		Scale High: 100.0 Scale Low: 0.0	V No Action	Engineering Low: -999999999999999999999	is
1	Regist ent/Alarm Type	er Address: 1 Data Type: D SetP	ioint	Scale High: 100.0 Scale Low: 0.0	No Action	Engineering Low: 999999999999999999999999999999999999	is
1 2	Regist ent/Alarm- Type No	er Address: 1 Data Type: D SetP	ioint No Action	Scale High: 100.0 Scale Low: 0.0		Engineering Low: 999999999999999999999999999999999999	;is
1 2 3	Regist ent/Alarm- Type No No	er Address: 1 Data Type: p SetP 0.0	iouble	Scale High: 100.0 Scale Low: 0.0	No Action	Engineering Low: -999999999999999999999999999999999999	iis

RealTime Co		e di e		R. Ca			
		* 1 2 +	+ +				
💦 Auto							
			Page	e <b>1</b>			
1 2	3 4	5 6	7 8	9	10	11   12	13 14
ſ	Mode: Enable	-	Page Ma	ırks:		Speed: 1 Sec/	/Dot 🔻
	ction: Horizonta					kground: Black	-
_ Pen		the second s	Math ch	annel I	nere for d		
No.	Channel	Color	V	Vidth	Low	High	
1	Math1	Blue	• 1	-	0.0	100.0	
2	AII2_5	Green	• 1	-	0.00	100.00	
3	AII3_5	Cyan	• 1	-	0.00	100.00	
4	AII4_5	Red	• 1	_	0.00	100.00	
5	AII5_5	Magenta	• 1	-	0.00	100.00	
6	AII6_5	Yellow	▼ 1	_	0.00	100.00	
7	AII7_5	🗾 🔳 Gray	▼ 1		0.00	100.00	
8	AII8_5	Deep Blue	<b>•</b> 1	-	0.00	100.00	
					<> Back	ward + Forw	ard

# 5.2 Data dynamic Exchange (DDE)

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 DAQ software can be exchanged with Excel on DDE link.

After completion of all network configuration (adding of all Modbus slaves), then open Data acquisition studio software from start – programs – Data acquisition studio – Real-time viewer

💔 Dis	play rea	l-time m	easured	valu	e from: C	: Wata Acqu
File(F)	View(∀)	Page(P)	Window(	W) L	anguage(L)	Help(H)
📄 Nev 🚵 Ope	v n			123	₩ ₩	
🛅 Clos	🛅 Close					
Rec	ent		, ce		Active	Time
11 -	1 ppck	1.1.10	em			/09 10:14:2
re Cre	ate DDE III	nk in Excel	1			/09 10:14:5
🔟 Exit			-		05/11	/09 10:15:2

Project – create DDE link in excel

Specify the path and file name as follows.

Save As					? 🗙
Save in:	🞯 Desktop		-	← 🛍 💣 📰•	
My Recent Documents Desktop My Documents	My Documents My Computer My Network Pla BCD				
My Computer					
My Network Places	File name:	DDE_Demo1		•	Save
1 13065	Save as type:	excel file (*.csv)		•	Cancel

By default the file name will start with DDE and the project name with underscore. Save the file name in PC at selected path as above to proceed further.

For example, if desk top is selected in the path, then excel file should be available in the desk top. 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 desk top created for using DDE application with the recorder through Observer software.

Microso	ft Excel
1	This workbook contains links to other data sources.   If you update the links, Excel will attempt to retrieve the latest data.  If you don't update the links, Excel will use the previous information.  Note that data links can be used to access and share confidential information without your permission and possibly perform other harmful actions. Do not update the links if you do not trust the source of this workbook.
	Update Don't Update Help

Click on update to activate DDE between DAQ software and Excel application. If the DDE is successful, then real time data of the channels 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!\_TagN

Where N = 1,2,3.....

Application = RealTime\_Viewer Topic = Tag Service Tag name = \_Tag1 (Please observe underscore before the tag number) It is possible to exchange data related to AI, DI, DO, Counters and Totalizers between DAQ software and third party applications running under windows operating systems via DDE.

#### Procedure to find the tag number for the tag name to use in DDE applications

Create DDE link from Real time viewer.

Open Excel file.

Three columns appear in the excel file as Name, Unit and Value as shown in the Excel file.

Name: This is tag name actually defined in the channel configuration

Unit: This is unit for the tag name defined in the channel configuration

Value: This is the specific cell where, process value for the tag will appear in real time.

To find the DDE format for any tag in channel configuration, for a specific tag, double click at "Value" column for the corresponding tag defined at Name. For ex: For Name= Tag1 is at R2C1, double click at cell R2C3 to see DDE format for Tag1. Click on Esc button at the key board to see process value at the cell from displaying DDE format.

📧 Mi	icro	soft	Exce	el - I	DDE	_Der	no1		
:2	File	<u>E</u> dit	: <u>V</u>	jew	Ins	ert	Form	at	<u>T</u> oo
1	2	, 13		4	4	ABC	í,	Ж	
		C2.	1			•		ţ:	÷ :
		А			В			С	
1	Nai	me		Un	it		Valu	e	
2	Tag	g1		%			)	/ 9	<u>6.8</u> )
3	Tag	<u></u> 2						9	6.8
4	Tag	<u></u> ζ3				/		9	6.8
5	Tag	g4				4		9	6.8
6	Tag	ς5		oub: ere	Le ( to	clio see		9	6.8
7	Tag	g6			for			9	6.8
8	Tag	g7						9	6.8
9	Tag	<u></u> 28	Pr	 		sc"		9	6.8
10	Tag	χ9			in i			9	6.8
11	Tag	g10			id t to	o g vie		9	6.8
12	Tag	g11				val		9	6.8
13	Tag	g12	in	re	al	tir	e	9	6.8
14	Tag	g13						9	6.8
15	Tag	g14						9	6.8
16	Tag	g15						9	6.8
17	Tag	g16						9	6.8

If any "Error" appears in any cell at excel, possible reasons is no data available at selected tag. Check the channel configuration and make sure value is available

If any "NAME" text appears in the excel file, it indicates that particular tag is not configured properly. Tag name may not available at DAQ software.

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

- 1. RAM size in the PC is very less. Restart the computer and then create the DDE link once again and open the Excel file.
- Increase virtual memory in the PC. Please contact system administrator to check the virtual memory settings at the PC. My computer-properties-advanced-performance settings –advancedvirtual 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]sheet1!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]Sheet1!A7:A11").Value = data
```

'close dde link This is comment only

```
DDETerminate (RSIchan)
```

End Sub

## Example 3

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

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

=RealTime\_Viewer|TagService!\_Tag1

Application = RealTime\_Viewer Topic = Tag Service Tag name = \_Tag1 (Please observe underscore before the tag number)

The above tag information can be directly configured in SCADA to enable DDE between DAQ 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 = DAQ (No gaps)

- 4) Application = RealTime\_Viewer
- 5) Topic = Tag Service
- 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 DAQ.
- 9) Select DAQ at the NODE
- 10) Write the tag address. For ex: analog input 1, Al1 should be written as \_Tag1. Please check up excel file for the tag number corresponding to the tag name defined in the DAQ configuration. Please note that underscore is required before the tag number other wise, data will not be 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.

Using DDE, in Excel, it is possible to read status of Math channels, Analog Inputs, Analog Outputs, Digital Inputs, Digital Outputs, Temperature from RTD and Thermocouple type of IO cards, Counter values etc.,

In Excel, for Analog input/RTD/TC IO module at value, if it show "Error", it means, no data available in specific channel.

For Digital Input, 0 indicates bit is low, 1 indicates bit is high. For Digital output, "Empty" indicates no digital output, 1 indicates output is available

🖼 Mi	icrosoft Exc	el - DDE_Tes	t3				
:	<u>Eile E</u> dit <u>y</u>	(iew <u>I</u> nsert	Format <u>T</u> o	ols <u>D</u> ata <u>W</u>	indow <u>H</u> elp		
: 📂		新細明體	•	12 <b>- B</b>	<u>Ι</u> ∐ ≣	<b>e e</b>	\$ %
	C76	-	fx	=RealTime\	/iewerlTagS	Service!_Ta;	g75
	A	В	С	D	E	F	G
1	Name	Unit	Value				
2	Tagl		100	)			
3	Tag2		100	)			
4	Tag3		100	)			
5	AII1_4	%	Error	N	o data av	ailable a	t
6	AII2_4	%	Error			nels, che	ck
- 7 -	AII3_4	%	Error		iring to odule	the IO	
8	AII4_4	%	Error				
9	AII5_4	%	Error				
10	AII6_4	%	Error				
11	AII7_4	%	Error				
12	AII8_4	%	Error				

# 6. Historical Viewer

It is a PC based tool to view historical data and historical alarms from HMI & Paperless Recorder.

If you select "Historical viewer" during installation of DAQ software or HMI software, then, historical viewer installed in PC and it can be opened as shown below



By default, historical data from devices after import will be stored at path C:\Program files\Historical viewer\Historical/Project.daq

#### 6.1 Human machine interface (HMI)

#### 6.1.1 Preparation of historical data storage in HMI

Procedure

- 1. Configure data logging, insert historical trend object in HMI, complete configuration of pens, download application to HMI and make sure historical data is showing properly in historical trend at run time.
- 2. Configure alarms, insert historical alarm box in HMI, download application to HMI and check historical alarms. If required, refresh alarms in Run time using Button linked with

"Update Historical" function and make sure historical alarms showing properly in historical alarm box in Run time

- 3. Historical data and alarms are stored in internal memory/SD card as per data storage path defined at Project explorer-Setting-Runtime-Internal storage
- 4. Once data logging is configured in HMI, in Run time, historical data will be stored in HMI internal memory or SD card as per configuration. Once alarms are configured properly in HMI and they appear in run time, historical alarms will be stored in HMI internal memory or SD card as per configuration. These historical alarms and historical data can be archived in PC later using historical viewer software.

Sett	ing	
General	Runtime Resource	
	Internal Storage Internal Memory 🗸 🗸	

5. Historical data and alarms can be dumped from Internal memory/SD card to USB stick or directly transfer from HMI to PC via Ethernet using Historical viewer software.

## 6.1.2 HMI data archive in PC using storage device (USB stick)

 First make sure data logging and historical trend is configured properly in HMI and they are running fine in Run time. Create a button in HMI screen. Link with a function – "Dump Alarms and Data"

Dump	)						
🔡 Button4 Configuration							
General E	3ands	Common	Events				
	Clicked						
DumpAlarmandData();							

- 2. Check contents in USB stick. Make sure it is empty at first time and no invalid files are available in USB stick.
- 3. Insert USB stick in USB port of HMI

- 4. In Run time, check if historical data is showing properly or not in historical trend. If required, press "Zoom" and verify the presence of data.
- 5. Press on "Dump" button. Then, it transfers historical data and alarms from Internal memory/SD card to USB stick
- 6. Now, remove USB stick from HMI. Insert USB stick in PC and check its contents. It should have files similar to the following



7. Make sure Historical viewer software installed in PC. Double click on "Historical viewer" icon available at desktop

🗷 Create a new project	
Create project type	
• Recorder	
С нмі	
С ОК Х	Cancel

8. Select HMI and click "OK"

🔑 Create a new project	X					
New Project Enter the new name: Test1						
Select file path Timeout: 3 Sec Please select and configure one bank below as you need						
Storage Media D:\     Ethernet						
🗸 OK 🔀 Cancel						

9. Enter the Project name. Select "Storage media", click at open folder icon and select the path for the USB stick. Then, click "OK"

Information 🛛 🕅			
?	Do you want to receive configuration data now ?(Y/N)		
	Yes No		

10. Click "Yes".

🔑 Display/Change	configuration dat	ta from: C:\Progra	m Files\Historical	Viewer\Historical\	
File(F) Edit(E) Lang	juage(L) Help(H)				
🗅 👌 🔒   📚	🕴 🕹 🗙 🔪 🗟	1 + +	🔹 🤌 🔯		
Name: T	ag26	_	Unit:		
Comment:			Decimal: 0	)	
No.	Name	Unit	Comment	Trigger	Decimal
1	Tag26			By Time, Instant, 1 Se	0
2	Tag27			By Time, Instant, 1 Se	0
3	Tag28			By Time, Instant, 1 Se	0
4	Tag29			By Time, Instant, 1 Se	0

11. All data log tags will be shown here. Enter the unit and select the number of decimal points

12. Click "Save" icon 💷. Then, click Return icon 🙆 to return to main program



13. Click "Yes' to save project configuration in PC

Informa	tion	
?	Now you can import n	neasured data !! Continue ?(Y/N)
	Yes	No

14. Click "Yes" to import historical data and alarms from USB stick to PC

Information 🛛 🕅				
?	Do you want to del	ete storage media data ?(Y/N)		
	Yes	No		

15. Click "Yes" to delete data and alarms from USB stick. Click "No", if you wishes to remain historical data and alarms in USB stick after transferring to PC



16. Now, you can view historical data trend in PC

#### 6.1.3 HMI data archive in PC via Ethernet

- 1. First make sure data logging and historical trend is configured properly in HMI and they are running fine in Run time.
- 2. In Run time, check if historical data is showing properly or not in historical trend. If required, press "Zoom" and verify the presence of data.
- 3. Check IP address of HMI using System information at Control centre at HMI startup. For example, it is 192.168.0.203
- 4. If HMI is connected to PC directly, then, use cross over Ethernet cable. If HMI is connected to PC via LAN, then, use straight cable



5. At Dos prompt, using "Ping" instruction, check if communication is OK between HMI and PC. If it is OK, then, you should get reply as follows. If there is no reply, then, check Ethernet cable and IP address of HMI

📾 Command Prompt			
Microsoft Windows XP [Version 5.1.2600] (C) Copyright 1985-2001 Microsoft Corp.			
C:\Documents and Settings\mahi.MAHIDHAR>Ping 192.168.0.203			
Pinging 192.168.0.203 with 32 bytes of data:			
Reply from 192.168.0.203: bytes=32 time<1ms TTL=128 Reply from 192.168.0.203: bytes=32 time<1ms TTL=128			
Reply from 192.168.0.203: bytes=32 time<1ms TTL=128 Reply from 192.168.0.203: bytes=32 time<1ms TTL=128			
Ping statistics for 192.168.0.203: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),			
Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms			
C:\Documents and Settings\mahi.MAHIDHAR>			

6. Make sure Historical viewer software installed in PC. Double click on "Historical viewer" icon available at desktop

🗠 Create a new project 💦 🔲 💽			
Create project type			
Recorder			
С нмі			
С ОК Х	Cancel		

7. Select HMI and click "OK"

P	Create a new project	×
	New Project Enter the new name: Test2	
	Select file path Timeout: 3 🗲 Sec Please select and configure one bank below as you need	
	🔿 Storage Media 🔗	
	© Ethernet	
	✓ OK X Cancel	

8. Enter the Project name. Select "Ethernet", click at open folder icon 🖻 and Enter IP address of HMI. Then, click "OK"

🔑 Bank Configure		
IP Address: 192.168.0.203		
Default		

Information				
2	Do you want to receive configuration data now ?(Y/N)			
	Yes No			

- 9. Click "Yes".
- 10. If security level is configured for historical viewer, then, it needs to enter user name and password

Login		
User:	Administrator	•
Password:	*	
	🗸 ОК	X Cancel

🔑 Display/Change	e configuration da	ta from: C:\Progra	m Files\Historical	Viewer\Historical\	🗖 🗖
File(F) Edit(E) Lanç	juage(L) Help(H)				
🗅 🚵 🖶   📚	a l 🔮 🗙 📐 🗟	*	🔹 🤌 🔟		
Name: Tag26 Unit:					
Comment:	Comment: Decimal: 0				
No.	Name	Unit	Comment	Trigger	Decimal
1	Tag26			By Time, Instant, 1 Se	0
2	Tag27			By Time, Instant, 1 Se	0
3	Tag28			By Time, Instant, 1 See	0
4	Tag29			By Time, Instant, 1 Se	0

- 11. All data log tags will be shown here. Enter the unit and select the number of decimal points
- 12. Click "Save" icon 💷. Then, click Return icon 🙆 to return to main program



13. Click "Yes' to save project configuration in PC

Information				
2	Now you can import measured data !! Continue ?(Y/N)			
	Yes	No		

14. Click "Yes" to import historical data and alarms from USB stick to PC



15. Click "Yes" to delete data and alarms from USB stick. Click "No", if you wishes to remain historical data and alarms in USB stick after transferring to PC



- 16. Now, you can view historical data trend in PC
- 17. If security is configured for Historical viewer, then, after seeing the data, if you wishes to close the historical viewer or log out, then, it prompts to digitally sign the record by entering user name and password. Then only, it is possible to exit from historical viewer

Signature		X
User:	Administrator	
Password:	*	
Status:	Pass 💌	
Comment:		
	✓ OK X Cancel	

# 6.2 Paperless Recorder

# 6.2.1 Paperless data archive in PC using storage device (CF card)

- 1. Check contents in CF card. Make sure it is empty at first time and no invalid files are available in CF card.
- 2. Insert CF card in Paperless Recorder. Check icons on Top Right side of the Recorder. CF should show 99% empty. If CF card is not inserted properly, then, it shows with Red color mark on CF icon



3. First time, press on "Config" key. Then, press on "Save" key.

It display message "Do you want to save configuration o storage media?

Press "Yes" key. Then press "Back" key to return to main menu

Now, if you check contents in CF card, you should have the following files



These two files are important to create a new project in PC.

Note: If you wish to send us configuration files to check your configuration, you need to send these two files back to factory

4. In Recorder, Press on "Dump" button.

Do you want to dump historical data and event list to storage media?

Press on "Yes" key

Then, it transfers historical data and alarms from internal memory to CF card

5. Now, remove CF card from Paperless Recorder. Insert CF card in a CF reader, plug in to PC and check its contents. It should have files similar to the following

📄 Alarm	📼 P5.idx	🚾 P12	🚾 P18.idx	🚾 P25
🖬 IO	📼 P6	國 P12.idx	🚾 P19	🚾 P25.idx
📼 P0	📼 P6.idx	🖬 P13	🚾 P19.idx	🚾 P26
🚾 P0.idx	📼 P7	🖬 P13.idx	🚾 P20	🚾 P26.idx
📼 P1	📼 P7.idx	🖬 P14	國 P20.idx	🚾 P27
📼 P1.idx	📼 P8	國 P14.idx	🚾 P21	🖻 P27.idx
🚾 P2	📼 P8.idx	📼 P15	國 P21.idx	🚾 P28
國 P2.idx	🚾 P9	國 P15.idx	🚾 P22	🚾 P28.idx
📼 P3	📼 P9.idx	🚾 P16	國 P22.idx	🖻 P29
國 P3.idx	🚾 P10	國 P16.idx	🚾 P23	🚾 P29.idx
🚾 P4	國 P10.idx	🚾 P17	國 P23.idx	🖻 Recorder.cfg
國 P4.idx	🚾 P11	國 P17.idx	🚾 P24	
📼 P5	📼 P11.idx	📼 P18	國 P24.idx	

 Make sure DAQ or Historical viewer software installed in PC. Double click on "Historical viewer" icon available at desktop

R	Create a new project 💦 🗖 🗖 🔀
	Create project type
	• Recorder
	C HMI
	Cancel

7. Select Recorder and click "OK"

P	Create a new project	X
	New Project Enter the new name: Test1	
	Select file path Timeout: 3 Sec Please select and configure one bank below as you need	
	<ul> <li>✓ Storage Media</li> <li>○ Ethernet</li> </ul>	
	OK X Cancel	

8. Enter the Project name. Select "Storage media", click at open folder icon 🖻 and select the path for the CF card. Then, click "OK"



Click "Yes" to receive configuration from CF card to PC. Then, click "Save" icon to save configuration in PC. Then, click "Close"

If IO.dat and Recorder.cfg files are not available in CF card, then, you cannot complete this step

P	Dis	play	y/Ch	ange	e conf	igura	tion	data	a fro	m:	C:\₽	Prog	gram	Fi	les \	His	tori	cal \	/iev	ver	\Hi	stor	rica	al	. 💶		$\times$
File	(F)	Edi	t(E)	Lang	juage(L)	) Hel	p(H)															10					
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	AI		0	DI	Math		AC																				
												A	11														
	1		2	2	3		4	1	5			6		7			8		9			10			11	•	Þ
	гР	rop	ertie	s																							
				ie: A	1		_				Des	c: [														-	
												1															
			Lo	g:						Met	hod	: Ins	stant					•				s	pee	ed:	1 S	•	]
				Off	iset: 🗖	Π			_			Ga	in: P	1 00	חר			_									
	Offset: 0.0 Gain: 1.000 Sensor: Thermocouple J Tγpe Unit: ℃ Range: -120.0~1000.0 ▼																										
		ven	+																								
		Jo.	-	ype	:	SetPo	oint				J	lob1							Job:	2				H	yste	resis	
		1	н	-	776.	)			Log	Ala	arm				-	No	) Ac	tion						Off		-	
		2	Ē	-	104.	ר		-	Log		arm				-	, No		tion					- 1	Off		-	
					-											-										_	-
		3	H		860.	)			Log	Ala	arm					INC	Ac	tion						Off		-	
		4		. 💌	20.0				Log	Ala	arm					No	) Ac	tion						Off		-	]

Informa	tion		×
2	Now you can import n	neasured data !	! Continue ?(Y/N)
	Yes	No	]
9. Click "Yes" to import historical data from CF card to PC



10. Click "Yes" to delete historical data and alarms from CF card. Click "No", if you wishes to remain historical data and alarms in CF card after transferring to PC



11. Now, you can view historical data trend in PC

#### 6.2.2 Paperless data archive in PC via Ethernet

- Check IP address of Paperless Recorder. Press "Config" key, select "System info", press "Enter" key. Note down IP address of Recorder. For example, it is 192.168.0.203
- 2. If Paperless Recorder connected to PC directly, then, use cross over Ethernet cable. If Paperless Recorder connected to PC via LAN, then, use straight cable



3. At Dos prompt, using "Ping" instruction, check if communication is OK between Paperless Recorder and PC. If it is OK, then, you should get reply as follows. If there is no reply, then, check Ethernet cable and IP address of Paperless Recorder

📾 Command Prompt	
Microsoft Windows XP [Version 5.1.2600] (C) Copyright 1985-2001 Microsoft Corp.	
C:\Documents and Settings\mahi.MAHIDHAR>Ping 192.168.0.20	3
Pinging 192.168.0.203 with 32 bytes of data:	
Reply from 192.168.0.203: bytes=32 time<1ms TTL=128 Reply from 192.168.0.203: bytes=32 time<1ms TTL=128	
Reply from 192.168.0.203: bytes=32 time<1ms TTL=128 Reply from 192.168.0.203: bytes=32 time<1ms TTL=128	
Ping statistics for 192.168.0.203: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),	
Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms	
C:\Documents and Settings\mahi.MAHIDHAR>	

4. Make sure DAQ/Historical viewer software installed in PC. Double click on "Historical viewer" icon available at desktop. Alternatively, click at Start-Programs-Historical viewer

🗠 Create a new project	
Create project type	
• Recorder	
С нмі	
С ОК	Cancel

5. Select Recorder and click "OK"

PCreate a new project
New Project
Enter the new name: Test2
Select file path
Timeout: 1 Sec
Please select and configure one bank below as you need
C Storage Media
© Ethernet
C R5232
OK X Cancel

6. Enter the Project name. Select "Ethernet", click at open folder icon 🖻 and Enter IP address of Paperless Recorder. Then, click "OK"

🔑 Bank Configure	
IP Address: 192.168.0.203	
De	fault



- 7. Click "Yes" to receive configuration from Recorder to PC
- 8. If CFR21 is selected in Paperless Recorder, then, it needs to enter user name and password

Login		
	Administrator	
Password:	*	
	🗸 ОК	X Cancel

9. Click "OK" to receive configuration from Recorder to PC. Then, click "Save" icon to save configuration in PC. Then, click "Close"



10. Click "Yes' to save project configuration in PC

Informa	tion	×
2	Now you can import n	neasured data !! Continue ?(Y/N)
	Yes	No

11. Click "Yes" to import historical data and alarms from Recorder to PC



- 12. Now, you can view historical data trend in PC
- 13. If CFR21 is configured in Paperless Recorder, then, after seeing the data, if you wishes to close the historical viewer or log out, then, it prompts to digitally sign the record by entering user name and password. Then only, it is possible to exit from historical viewer

🗠 Signature		×
User:	Administrator	
Password:		
Status:	Pass	
Comment:		
	✓ OK X Cancel	

# 6.3 Tools

# 6.3.1 Tool Bar

0	💩   🚃 🗐 🗐   😼 🖕 🖄 🖅   🧑 💁   ⊅ 🔶 🔍 🗮 🖛 🐬 W 🖪
Ŧ	🗎 🔑 📔 1 Scale 🔍
	To open new project
è	To open existing project file
Ş	Print
	Display trend
	Display Events and alarm list
ß	Display Report
	Display values list
6	Export data into excel
*	Copy curves to clipboard
ß	Remark, write a comment
Ö	Search by specific time
⊕	Search by a period of time

- Fast back ward for data monitoring
- Backward
- Forward
- **Fast forward**
- Q Zoom out
- Coom in
- Xoom all
- Zoom by time
- Zoom by value
- B Navigate to next page
- Olose historical viewer and return to Main program



- White background
- Show graphical representation horizontally
- Show graphical representation vertically

## 6.3.2 Menu Bar



🗠 Dis	play me	asured	values fr	om histo	orical d
File(F)	Edit(E)	View(∀)	Disply(D)	Page(P)	Search(
	눰 Imp	ort		Ctrl	+Alt+I
	📸 Ехр	ort data to	Excel	Ctrl+	-Alt+O
Clear		Ctrl	+Alt+L		
	为 Cop	У		Ctrl+	FAlt+C
	🖹 Rem	nark		Ctrl+	FAlt+R
	Imp	ort Option			
	🖶 Exp	ort data to	o Database	Ctrl-	+Alt+B
	Sign	ature		Ctrl-	+Alt+S

Import: Import historical data from device to PC

Export data to Excel: To export data to excel

Clear: To clear the clipboard

Copy: To copy the current screen image to clipboard.

Remark: To enter custom comments by user

Import Option: To refresh historical data as per set time interval

View(V) Disply(D)	Page(P) S	6
🔍 Zoom In	Ctrl+I	
🔍 Zoom Out	Ctrl+T	Zoom by 10 Min./Page
🔍 Zoom All	Ctrl+A	Zoom by 30 Min./Page
Zoom by 100 mS	ec/Dot	Zoom by 1 Hour/Page
Zoom by 1 Sec/E	)ot	Zoom by 2 Hour/Page
Zoom by 2 Sec/D	)ot	Zoom by 4 Hour/Page
Zoom by 5 Sec/D	)ot	Zoom by 8 Hour/Page
Zoom by 10 Sec/	'Dot	Zoom by Day/Page
Zoom by 20 Sec/	'Dot	Zoom by Week/Page
Zoom by 30 Sec/	'Dot	Zoom by Month/Page
Zoom by 1 Min./	Dot	🕲 Horizontally
Zoom by 2 Min./i	Dot	Vertically
Zoom by 5 Min./i	Dot	· · · · · · · · · · · · · · · · · · ·
Zoom by 10 Min.	/Dot	B Black background
Zoom by 30 Min.	/Dot	W White background

Zoom: Various options available for selection as shown above

Horizontally: To view historical trend horizontally in screen

Vertically: To view historical trend vertically in screen
Black background: To set black back ground for historical trend
White background: To set white background for historical trend





Page: To select the page



Search: To search historical data by various options



# 6.4 Import and export options



~	Import Option		×	
	Option item	Period:	File export attribute	
	Manually	1 💌 Hour	Single file	
	O Automatically		C Multitude	
		Database Option		
	C Automatically and Export to excel	Export format :		
	C Automatically and Export to database format	Microsoft Text (*.	csv) 🔽	
	File			
	Select file path : C:\Program Files\DAQ Studio\RealTime\Test5			
Cancel				

#### 6.4.1 Manually

This is default selection. It is used to import historical data and alarms manually from device to PC. This function is same as click at icon 1

Data will be imported from devices like Recorder, HMI etc. to PC and update proprietary database. All database format is proprietary for data security reasons

## 6.4.2 Automatically

Select this option and select period between 1 to 24 hrs. to automatically import historical data and alarms from device to PC. Automatic works only when device is connected to PC via Ethernet

🖻 Import Option	×
Option item	Period: File export attribute
C Manually	Hour
Automatically	C Multitude
	Database Option
C Automatically and Export to excel	Export format :
C Automatically and Export to database format	Microsoft Text (*.csv)
Select file path : C:\Program Files\DAQ Studio\R	ealTime\Test5
🗸 ок	X Cancel

For ex: If this option is selected, then, data will be imported automatically from devices like Recorder, HMI etc. to PC and update proprietary database. All database format is proprietary for data security reasons

### 6.4.3 Automatically and export to Excel

Select this option if you wish to import historical data and alarms from device to PC and export to CSV files automatically with preset time interval from 1 to 24 hrs. Remember, the new export will overwrite earlier Excel files. This feature will be useful if you wish to import historical data to other databases. It is required to develop custom applications in third party software to import data from these files and then clear these files if possible.

📧 Import Option		$\mathbf{X}$
Option item	Period:	File export attribute
C Manually	1 V Hour	Single file
C Automatically		C Multitude
Automatically and Export to excel	Database Option	
<ul> <li>Automatically and Export to excel</li> </ul>	Export format :	
C Automatically and Export to database format	Microsoft Text (*	.csv)
File		
Select file path : C:\Program Files\DAQ Studio\F	RealTime\Test5	6
🗸 ок	X Cancel	

## 6.4.4 Automatically and export to database format

Select this option if you wish to import historical data and alarms from device to PC and export to selected format automatically with preset time interval from 1 to 24 hrs. Remember, the new export will overwrite earlier files.

#### File export attributes

#### Single file for tags

Each Tag will have one dedicated file.

#### Multitude

If this option is selected, then, a folder will be created for each 24 hrs and each Tag will have one dedicated file. Ex: Folder name: 201129, year 2011, month = 2, date = 9

#### 6.5 Export data

#### 6.5.1 Export data to Excel

It is to export historical data to Excel files in selected path manually

In this case, all the tags will be located in same file(s). For example, if you have 2 tags in the project, all tags will appear in different columns in Excel file as shown below. Two files will be created with names Project name\_Pen.csv and Project name\_Event.csv

Ex: Test1\_Event.csv

Ex: Test1\_Pen\_csv, Where Test1 is project name

	A	В	С	
1	Date/Time	Tag1	Tag2	
2		Instant	Instant	
3		%	%	
4	02-09-11 13:35:54	545.3	507.5	
5	02-09-11 13:35:54	546.2	508	
6	02-09-11 13:35:54	547.1	508.6	

If there is large data, after 65535 rows, it creates new excel file with name Project name (Part X), where X is the file number say 1, 2 etc.

🗖 Display me	easured values fi	om historical da	ta of C:\Data	Acquisition	Studio\RealTi	ime\Demo1.pr	rj
File(F)  Edit(E)	View(V) Disply(D)	Page(P) Search(S	i) Help(H)				
📄 🚵 📚	🚃 📾 🖨 🔳	🛛 😼 🐇 🚵	ō 💁 🛛 🗲	+ + ‡	( Q Q Q	Zoom Size	💽 🛛 🇮 🙇 🖜
🗐 🖶 💋	1 Scale	- 0					

Edit(E)	View(V)	Disply(D)	Page(P)	Search(
눰 Imp	ort	Ctrl	+Alt+I	
📸 Ехр	ort data to	Ctrl+	-Alt+O	
Clea	ar		Ctrl-	+Alt+L
为 Сору			Ctrl+	-Alt+C
🚵 Remark			Ctrl+	FAIt+R
Imp	ort Option			
🛃 Ехр	ort data to	o Database	Ctrl-	+Alt+B

Export data in Excel	
Range The display C Time period C All	Select Pens Speed value below will be the dot interval of all the pen data to be exported. Speed: The display
From: 09-Feb-11 V 1:04:59 PM V	Source List: Destination List:
File       C:\Program Files\DAQ Studio\RealTime\Test5\T         Image: Event file:       C:\Program Files\DAQ Studio\RealTime\Test5\T	

#### Range

The display: Select this option if it is required to export data specific to display screen (current view).

Time Period: Select this option and enter start data, end date, start time and end time. This is to select historical data with specific time period and then export to excel

All: Select this option if all the historical data needs to export to excel files.

**Speed**: This is to select resolution for data archival.

100 msec/dot, 1 sec/dot, 2 sec/dot, 5 sec/dot, 10 sec/dot, 20 sec/dot, 30 sec/dot, 1 min/dot, 2 min/dot, 5 min/dot, 10 min/dot, 30 min/dot, 10 min/page, 30 min/page, 1 hr/page, 2 hrs/page, 4 hrs/page, 8 hrs/page, day/page, week/page and month/page

For example: If 1 sec/dot selected, then you can archive data once in a second.

If 1 min/dot selected, then you can archive data once in 1 min

Source List: Tags available for selection for data export

Destination List: Tags already selected for data export



Move Tag from source to Destination

Move all Tags from Source to Destination

Move Tags from Destination to Source

Move all Tags from Destination to Source

Pen file: Select path of data files where all the excel files (data) need to be available.

**Event file:** Select path of event files where all the excel files (event/alarms) to be available.

#### 6.5.2 Export data to database

It is to export historical data to database in selected path manually

In this case, each tag will have one dedicated file. This is not same as export data to Excel.

For example, if you have 2 tags in the project, 2 files will be created for data itself with names + 1 file for events say alarms

Ex: DB\_Tag1.csv, Tag1 data DB\_Tag2.csv, Tag2 data DB\_Event.csv, alarms data

<b>N</b>	⊠ Microsoft Excel - DB_Tag1.csv						
:1	<u>F</u> ile	<u>E</u> dit	⊻iew	Insert	Fo	rmat	<u>T</u> ools
1	6			Q.   10	,   E	d 🖻	<u>s -   -</u>
		<u>)</u>	<b>1</b>	3 3	S	1	
	D10 🔻 🏂						
		A		В		I	С
1	Date	Time		Value			
2	09	02-11	13:35	54	4.9		
3	09-	02-11	13:35	55	3.6		
4	09-	02-11	13:35	56	2.2		
5	09	02-11	13:35	57	0.7		
6	09	02-11	13:35	57	9.3		



Export data in Database	×
Range C The display C Time period C All	Select Pens Speed value below will be the dot interval of all the pen data to be exported.
From:     09-Feb-11     1:06:31 PM       To:     09-Feb-11     1:06:36 PM	Speed: Default Source List: Destination List: Tag1 >>
Database Option Export format : Microsoft Text (*.csv)	<
File         Image: Pen file:       C:\Program Files\DAQ Studio\RealTime\Test5\         Image: Event file:       C:\Program Files\DAQ Studio\RealTime\Test5\	e e
	Cancel

All descriptions are same as in earlier section.

Export format: Currently Microsoft Text (\*.CSV) is supported.

These files can be opened from Notepad also and they appear as follows

🚨 Untitled - No	tepad				
File Edit Format	View Help				
Open					? 🗙
Look in:	🞯 Desktop		<b>~</b> (	g 🕸 📂 🖽-	
My Computer	DB_Tag1.csv BDB_Tag2.csv				
, ,	<				<u>&gt;</u>
	File name:	DB_Tag1.csv		<b>~</b>	Open
My Network	Files of type:	All Files		~	Cancel
	Encoding:	ANSI		<b>~</b>	.:1

Select Files of type = "All files" and then, select the path where files are located

DB_Tag1.csv - Notepad					
File Edit Format View Help					
Date Time, Value 09/02/2011 13:35:53, 544.9 09/02/2011 13:35:54, 553.6 09/02/2011 13:35:55, 562.2 09/02/2011 13:35:56, 570.7 09/02/2011 13:35:57, 579.3					

#### 6.5.3 Export data automatically

If you wish to import data from device to PC first and export data automatically, then, select the required options properly at section "Import options"

#### 6.6 Remark

This is used to mark comment on data after verification. For example: supervisor checks historical trend and may wishes to mark a comment say "Irregular" at specific date/time. Maximum 40 characters are allowed in each remark.



In historical viewer, there is a pointer which moves around the trend for selecting the data. Just use the mouse and left-single click on historical trend, then you can see pointer "+" as shown attached.



Place the pointer at exact date/time required, then in menu, click on "Edit", then "Remark" and now, it prompts the following.

🔤 Remark Edit	$\mathbf{X}$
Remark Time:	5/11/2009 1:09:09 PM
Contents:	Irregular
	Can not more then 40 words
	VOK X Cancel





Later, it is possible to search data with respect to above remark by any one of the following ways.

Click on Remark icon 🖄

In Menu, click on "Search", then select "Remark"

Search(S)	Help(H)			
🙆 By Time	e			
📛 By Perio	od			
By Legend				
By Event/Alarm				
🖌 By Rem	ark			

Alternatively, near the task bar at bottom area of the screen, click on "Seek by Remark"

Seek by Legend	Seek by Event/Alarm	Seek by Remark	Trend Scale List
Page1-Page			Zoom Rate :100 mSec/Dot

Then, it will show list of Remarks available in a window. Just double click on selected Remark and pointer will navigate to specific remark number automatically at specific date/time.

#### 6.7 View



This is to display trend in monitor with various zoom rate.

Horizontally: To view historical trend horizontally in screen

Vertically: To view historical trend vertically in screen

Black background: To set black back ground for historical trend

White background: To set white background for historical trend

For example: Zoom 1 sec/dot

First check, monitor current display setting

If screen resolution is "1280 X 800" pixels, then you may be able to see data around 900 sec. at right side of the trend, it shows digital values and it occupies remaining pixels.

	Desktop	Screen Saver	Appearance	Settings	
				0	
		itor on NVIDIA G	ieForce FX 57(	DOLE	
	d Play Mor				
_	d Play Mon	1	Color qua	ality	
Plug an		More	Color qua Highest		<b>•</b>

## 6.8 Display



## 6.8.1 Trend view

It is to view historical trend



If 24 pens are configured in page1 and if it is required to view only 1 to 8 pens, then select them in window as shown.

	Tag1 (Rearmost)		
	🗹 ——— Tag2		
Т	🗹 ——— Tag3		
	🗹 ——— Tag4		
	🗹 ——— Tag5		
	🗹 ——— Tag6		
+	🗹 ——— Tag7		
	🗹 ——— Tag8		
Seek	by Legend Seek by Event/Alarm	Seek by Remark	Trend Scale List

Tag1 scale is -120 to 1000

Tag2 scale is -120 to 1100

If it is required to see both the scales, then click on "Trend scale List", select the required tags.

🗹 🗾 Tag1	(Rearmost)		
🗹 🗾 Tag2			
🗖 🗾 Tag3			
🔲 🗾 Tag4			
🔲 🗾 Tag5			
🔲 🔡 Tag6			
🗖 🗾 Tag7			
🗖 <b>E Tag</b> 8			
Seek by Legend	Seek by Event/Alarm	Seek by Remark	Trend Scale List 🕖

Select "All Scale" option as shown attached





If it is required to change color, width, display scale of specific pen, then do the settings in HMI configuration itself. The settings made at HMI shall be retrieved in historical viewer also. No separate display settings available for Historical viewer.

#### 6.8.2 Events/Alarm List

It is to view list of Events/Alarms

🖻 Display measured values from historical data of C:\Data Acquisition Studio\RealTime\Demo1.prj						
File(F) Edit(E) View(V	) Disply(D) Pa	age(P) Search(S)	Help(H)			
i 🖿 👌 📚 i 🔛 i	🛛 💹 Trend Vie	w				
	Event/Ala	irm List				
	🔄 🗊 Report Lis	st				
No./Ack	📘 📃 Value List		Active Time	Clear Time	Value/Contents	
1	Login	System	05/08/09 15:47:32			
2	Logout	System	05/08/09 15:55:18			
3	Login	System	05/08/09 15:55:18			
4	Logout	System	05/08/09 15:56:43			
5	Login	System	05/08/09 15:56:44			
6 🗖	HiAlarm	Tag1	05/08/09 15:58:19	Terminated	993.1	
7 🗆	HiHiAlarm	Tag1	05/08/09 15:58:19	Terminated	993.1	
8 🗖	LoAlarm	Tag1	05/08/09 16:03:21	Terminated	103.8	
9 🗆	LoLoAlarm	Tag1	05/08/09 16:03:47	Terminated	19.9	
10	Logout	System	05/08/09 17:00:40			

It shows list of Alarms/events as per occurrence of event as per channel configuration.

-E	vent/Alarm	SetPoint	Job1	Job2	L hushawa sia
	Туре				Hysteresis
1	Н	776.0	Log Alarm	Log Message_Message1	0.0
2	L	▼ 104.0	Log Alarm	No Action	0.0
з	нн	▼ 860.0	Log Alarm	No Action	0.0
4	LL	▼ 20.0	Log Alarm	No Action	0.0
5	Error	▼ 0.0	No Action	No Action	0.0

#### 6.8.3 Reports List (Only for Paperless Recorder)

At present, this is applicable only for Paperless Recorder (Not for HMI)

It is to view list of reports



#### 6.8.3.1 Reports Example

A factory operates for 8 hours a day from Monday to Friday, and the staff wish to get the total volume of production from daily, weekly and monthly reports.

Start totalizer at 8.00 hrs Stop Totalizer at 17.00 hrs

Source of Process value: Analog input1 (feed rate: 1000 M<sup>3</sup>/hr)

Totalizer1 configuration

RealTime Configure	
Timer Counter Totalizer	
Totalizer1	
1 2 3 4 5 6 7 8 9 10 11 12 13	
Name: Tolz1 Desc:	
Source: Tag1   Action: Enable  Decimal: 1	ㅋ
	-
Period: Hour 💌 Unit: M3/hr Preset: 0.0	
Low Cut: 0.0	
Event/Alarm	
No. Type SetPoint Job1 Job2	
1 No I 100.0 Log Alarm(AutoAck) No Action	
2 No 🖌 100.0 Log Alarm(AutoAck) No Action	

# **Timer 1 Configuration**

RealTime Configure	
🛛 🖶 🗮 🗙 😓 🔤 💈	% 🖬   ‡ + + ‡   🗞 🔟
Timer Counter	Totalizer
	Timer1
1 2 3 4	5 6 7 8 9 10 11 12
Turney Daily	Action: Enable
Type: Daily	Action: Enable
Time	
	Hour Minute
	8 🔽 🚺
Job1: Reset To	talizer Tolz1
JODI. Keset ic	101261_10121
Job2: Enable T	otalizer_Tolz1

It require to Reset Totalizer at start of totalizing every day to begin recording of new data again

# Timer2 Configuration

RealTime Configure
Timer Counter Totalizer
Timer2
1 2 3 4 5 6 7 8 9 10 11 12
Type: Daily  Action: Enable
Hour Minute
Job1: Log Report_Tolz1
Job2: Disable Totalizer_Tolz1

When Log Report function is used, it memorize Totalizer data at specific time which will be used later during reports archival as daily, weekly and monthly basis

# **Timer3 Configuration**

RealTime Configure	
🖶 📖 🗙 📚   🏤 📐 🗃 💈	% 🖬 │ ‡ + → ‡ │ 💱 🔟
Timer Counter	Totalizer
	Timer3
1 2 3 4	5 6 7 8 9 10 11 12
Type: Weekly	Action: Enable
_Time	
Day	Hour Minute
Monday 💌	7 💌 50 💌
· · · · · · · · · · · · · · · · · · ·	
Job1: Enable T	Timer_Timer1
,	
Job2: Enable T	

**Timer4 Configuration** 

RealTime Configure
Timer Counter Totalizer
Timer4
1 2 3 4 5 6 7 8 9 10 11 12
Type: Weekly 💽 Action: Enable
Time
Day Hour Minute
Friday V 17 V 10 V
Job1: Disable Timer_Timer1
Job2: Disable Timer_Timer2

Now, you can view various reports as follows

🗠 Disp	lay me	asured	values fr	om histo	orical data	of C:\
File(F)	Edit(E)	$\forall iew(\forall)$	Disply(D)	Page(P)	Search(S)	Help(H)
	ا 😞 🖠	<b>*</b>	I 📾 目			
			Lis	t 🔽	]	
No.	Туре	!	List Dai We		Value	
			Mo	nthly		

🗖 Display m	🗖 Display measured values from historical data of C:\Data Acquisition Studio\RealTime\Demo1.prj					
File(F) Edit(E)	View(V) Disply(D) Pa	ige(P) Search(S) <b>Help(H</b> )	)			
D 👌 📚   O						
	List	•	<	05/15/09	>	
No. Type	e Name	Value	Time			

*List*: It lists all the Reports logged with in a day. For ex: three shifts in same day

**Daily**: Select Daily to list log report for total day. Use avigate reports of other days

Weekly: Select Weekly to list log report for current week (Sunday to Saturday). Use



soft buttons to navigate to earlier and next week

*Monthly*: Select Monthly to list log report for current month. Use &

soft buttons to navigate to earlier and next months

For ex: 11 may, 2009, Monday, total feed rate is 1000 M<sup>3</sup>

12 may, 2009, Monday, total feed rate is 2000 M<sup>3</sup> 13 may, 2009, Monday, total feed rate is 3000 M<sup>3</sup> 14 may, 2009, Monday, total feed rate is 4000 M<sup>3</sup> 15 may, 2009, Monday, total feed rate is 5000 M<sup>3</sup>

For the weekly report from May10 to May16, it shows 15000 M<sup>3</sup>

Ex: First week total is 10000  $M^3$ , second week total is 15000  $M^3$ , third week total is 10000  $M^3$ and fourth week total is 12000  $M^3$ , then in the monthly report, it will show a total of 47000  $M^3$ 

#### 6.8.4 Value List

It is to view data in tabular column

05/12/09 07:59:44 ~ 05/12/09 16:20:01					
Date	Time	Tag1(%)	Tag2()	Tag3()	Tag4()
05/12/09	14:28:36	897.5	897.5	897.5	897.5
05/12/09	14:28:03	961.0	961.0	961.0	961.0
05/12/09	14:27:31	995.4	995.4	995.4	995.4
05/12/09	14:26:59	996.6	996.6	996.6	996.6
05/12/09	14:26:26	964.5	964.5	964.5	964.5
05/12/09	14:25:54	903.2	903.2	903.2	903.2
05/12/09	14:25:21	812.1	812.1	812.1	812.1
05/12/09	14:24:49	702.4	702.4	702.4	702.4
05/12/09	14:24:16	577.8	577.8	577.8	577.8
05/12/09	14:23:44	440.9	440.9	440.9	440.9
05/12/09	14:23:11	308.2	308.2	308.2	308.2
05/12/09	14:22:39	179.1	179.1	179.1	179.1
05/12/09	14:22:06	69.2	69.2	69.2	69.2
05/12/09	14:21:34	-19.7	-19.7	-19.7	-19.7
05/12/09	14:21:02	-83.9	-83.9	-83.9	-83.9
05/12/09	14:20:29	-115.9	-115.9	-115.9	-115.9
05/12/09	14:19:57	-116.1	-116.1	-116.1	-116.1
05/12/09	14:19:24	-83.2	-83.2	-83.2	-83.2

🗠 Display measured 🗤	alues from histo	orical data	of C:\Data	Acquisi	ition Stu	udio\RealTi	ime\Demo1.prj	
File(F) Edit(E) View(V)	Disply(D) Page(P)	Search(S)	Help(H)					
🖿 👌 📚   🗮 🕅	🗟 🔳 🛛 😼 🎖	6 🚵 🛛 🥝	) 🛱 🛛 👭	+ +	#	ર્લ્ 🔍	2 Sec/Dot	-
							100 mSec/Dot	< I
						05/15	1 Sec/Dot 2 Sec/Dot 5 Sec/Dot	
Date	Time		Tag1(%)			Tag2()	10 Sec/Dot 20 Sec/Dot	
05/15/09	10:05:29						30 Sec/Dot	~

Various Zoom rates are available for selection

100 msec/dot, 1 sec/dot, 2 sec/dot, 5 sec/dot, 10 sec/dot, 20 sec/dot, 30 sec/dot, 1 min/dot, 2 min/dot, 5 min/dot, 10 min/dot, 30 min/dot, 10 min/page, 30 min/page, 1 hr/page, 2 hr/page, 4 hr/page, 8 hr/page, day/page, week/page and month/page

# Search by specific time



Search by a period of time

Search by a period of time				
From:	5/15/2009	-	10:00:22 AM	•
To:	5/15/2009	•	10:20:55 AM	•
	🗸 ок		X Cancel	

## 6.9 Page Selection





In Menu, click on "Page" and then select the required page.

Number of pages available for display depends on configuration of display pages in Real time.

Maximum 200 display pages are available and maximum 24 pens (channels) can be configured in each page.

	2 🔂 🔪 🖻 🕈	<b>↓</b>				
💦 Auto						
		Pa	age1			
2	3 4	5   6   7	8 9	10 :	11   12   13	3   14 <u> </u>
1	Mode: Enable	▼ Page	Marks:	s	peed: 1 Sec/Dot	-
r-Pen	ection: Horizontal	▼ Page		Backyr	ound: Black	<b>_</b>
No.	Channel	Color	Width	Low	High	
1	Tag1	Blue	1 -	-120.0	1000.0	
1 2	Tag1			-120.0 -120.0	1000.0	
	-	Green 🗸		1		
2	Tag2	Green ·		-120.0	1100.0	
2 3	Tag2	Green  Cyan Red		-120.0 -120.0	1100.0	
2 3 4	Tag2	Green Cyan Red Magenta		-120.0 -120.0 -120.0	1100.0 1200.0 1300.0	
2 3 4 5	Tag2	Green Cyan Red Magenta Yellow		-120.0 -120.0 -120.0 -120.0	1100.0 1200.0 1300.0 1400.0	

Fig: Display pages configuration in Real time.

Note: In Mode, if "Disable" is selected, then page will be not visible in either Real time viewer or Historical viewer.

#### 6.10 Search

It is to search data and then take print out of trend if required.

Data can be searched with following criteria.

By Time By Period of Time Seek by Tag Name Seek by Event/Alarm Seek by Remark



#### 6.10.1 By Time

It is to search data by specifying exact date and time

Click on or search by specific time, alternatively, in Menu, click on "Search" and then Select "By Time".



Enter the required date and time of the data to be searched and click on "OK", then pointer in trend will go to specified date/time.

Search by a specific time				
Time: 3/15/2009 🔽 10:05:07 AM	••			
✓ OK Kancel				

#### 6.10.2 Period of Time

It is to search data specifying time interval

Click on  $\stackrel{\textcircled{0}}{\mapsto}$  icon to search data by a period of time, alternatively, click on "Menu", then select "By period".



Enter Start date, end date, start time and end time for the data to be searched and click on "OK", then it displays trend in specified range. To take print, click on Print icon it o open Print viewer and then click on if for printing the trend



		- Tag9		
		- Tag10		
T		- Tag11		
		- Tag12		
		- Tag13		
		- Tag14		
+		- Tag15		
		- Tag16		
Seel	k by Legend	Seek by Event/Alarm	Seek by Remark	Trend Scale List

## 6.10.3 By Tag Name

It is to select specific trend for display. For example: You have configured 8 tags in page no.1, to check tag1 clearly, you wish to see only trend1. Then, select this option and select the required tag.



Click on "Seek by TagName", and then select the required Tag to display in trend. If it requires viewing display scale, click on "Trend scale list" and select the required tag.

## 6.10.4 By Alarm/Event

It is to view and point to data based on selected event.



No./Ack	Туре	Source	Active Time
1	Login	System	06/03/09 11:18:13
2	Logout	System	06/03/09 11:18:34
3	Login	System	06/03/09 11:20:37
4	Logout	System	06/03/09 11:23:11
5	Login	System	06/03/09 11:23:11
Seek by Tag Name Se	ek by Event/Alarr	n Seek by Remark	Trend Scale List
		 Click here	

No./Ack	Туре	Source	Active Time	Clear Time	Value/
1	Login	System	06/03/09 11:18:13		
2	Logout	System	06/03/09 11:18:34		
3	Login	System	06/03/09 11:20:37		
4	Logout	System	06/03/09 11:23:11		
5	Login	System	06/03/09 11:23:11		
6 🗖	HiAlarm	Tag1	06/03/09 11:28:18	Terminated	783.2
7 🗖	HiHiAlarm	Tag1	06/03/09 11:28:23	Terminated	863.0
					Double click !!
Seek by Tag Name	Seek by Event/Alarn	Seek by Remark	Trend Scale List		

Select the required event/Alarm, then double click on it. Then, pointer in the trend will move to specific time at which event/Alarm is triggered.

## 6.10.5 By Remark

It is to view and point to data based on selected Remark.



	No.	Remark Time	Page	Content
$\mathbf{X}$	1	06/03/09 11:25:23	Page1	OK
1.1				
			Double click !!	
Seek	by Tag Nam	e Seek by Event/Alarm	Seek by Remark	Trend Scale List
			Clic	k here

	No.	Remark Time	Page	Content
$\mathbf{X}$	1	05/15/09 10:36:28	Page	ОК
$\sim$	2	05/15/09 10:41:06	Page	Irregular
			l.	Double click !!

All the list of Remarks will be shown in window at the bottom side of the screen as shown above. Select the Remark and double click. Then, pointer in trend will go to data where specific remark is marked earlier.

### 6.11 Print

It is to print Trends, Events/Alarms, Reports, Process Values etc.

First it requires to search the historical data as explained in earlier section and then click on Print icon, it open Print preview first and then click Print icon again to take print out.





# 7. Frequently asked questions

1. What is the difference between Data acquisition studio and IO studio software?

IO Studio software is a tool used for configuration of IO module from PC and it is also used for IO module diagnostics purpose. It is not for Real time Data logging and archival. Real time viewer is for data logging and archival

2. What is the difference between Observer software, Communicator software and DAQ software?

Observer software is used for Paperless Recorder

Communicator software is used for Temperature Controllers

DAQ software is used for IO modules, Paperless Recorders and Controllers

DAQ software is similar to Observer software but with additional features. Please check section 1.3 for details information about features available with DAQ software

3. Can I open IO Studio and Real Time viewer at same time in PC?

No. First open IO studio software for configuration of IO module. Close IO studio software and then open Real Time viewer

4. Can I open Observer software and DAQ software simultaneously in single PC?

No, it is not possible. It may conflict some of resources and it may generate some error messages.

It is not required to run Observer software and Data acquisition software simultaneously in same PC as Data acquisition software also covers paperless Recorders and Controllers shortly along with IO modules. In this case, it just need to uninstall Observer software and install data acquisition software

5. I want to run DAQ-Real time viewer in 3 different computers. Do I need to buy 3 nos. hardware lock?

Yes. It is required to buy 3 nos. USB based hardware lock (Keypro). This is license to use Data acquisition software in single PC. With out this hardware lock, data acquisition software will run in demo mode for 1 hr

6. I have only COM port in PC, I don't have USB port. How I can run DAQ software?

It requires another PC with USB port. Serial port based hardware lock is not available

7. I want to run Real Time viewer in single PC. I want to view historical data in other 2 computers in LAN. How many hardware locks I need to buy?

It requires purchase of single hardware lock for Real Time Viewer. It is not required to have hardware lock (Keypro) to view historical data in another computers via LAN

8. Can I connect DAQ software to third party devices via Modbus?

Yes, it is possible

9. Can I connect Recorder/Controllers to DAQ software?

Yes, it is possible

10. Can I send email from DAQ software?

Yes, it is possible

11. I want to search data and then export data to excel. Is it possible?

Yes, it is possible

12. Can I display Real time trends, digital values, bar graphs using DAQ software?

Yes, it is possible

13. How many trends I can view in single page and how many display pages are available?

24 pens/page and maximum 200 display pages

14. Can I exchange data from DAQ to another PC? How it is done?

Use Dynamic data exchange (DDE)

15. Can I switch on Digital Outputs from DAQ software?

If Digital Output cards like 8DIO, 4RO, 16DO is available in network, and then you will be able to switch on digital outputs based on events

16. Can I include customized mimics into DAQ software?

No, it is not possible

17. Can I take print out of trends, digital values etc., from DAQ software?

Yes, it is possible

18. Can I write a formula for computation?

Yes, you can use Math channels and write formula

19. Do you have internal timers, counters, Totalizers etc., in DAQ software?

There are 100 timers, 50 counters and 50 Totalizers in DAQ software

20. I want to control the pump based on Real time clock. Is it possible in DAQ?

Yes, you can use Timer and select type as Daily and then configure start and stop time

21. Can I configure Alarms in DAQ software?

Yes, it is possible

22. How many Tags supported in DAQ software?

Maximum 2048 including external and internal memory from DAQ 1.2 onwards

23. What is Tag?

It is a channel. Ex: AI, AO, DI, DO, Math etc..

24. Can I log report of counter values in digital IO module?

Yes, you can use 16DI and it support till 1 KHz. You can display counter values of 16DI module in DAQ software in future

- 25. I wish to see both Real time and historical combined. Is it possible? If Real time viewer, Select configuration and adjust display settings say day/page, then Real trend will show last 24 hrs display
- 26. I want to receive alarms by SMS. Is it possible? In this case, select Analog output module like IO-8AOI and then connect with GSM controller. Then, you can receive alarms by SMS.



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