

Scada User Manual

HERO BATTERY PACK ASSEMBLY LINE



Department of MBA – Controls Engineering

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1. Overview

This manual will introduce you to the basic Functionalities of SCADA Screens. In this, you will be given instruction to do SQL configuration ,INI File configurations, basic troubleshooting activities and familiarity with SCADA screens.

2. Working With SCADA

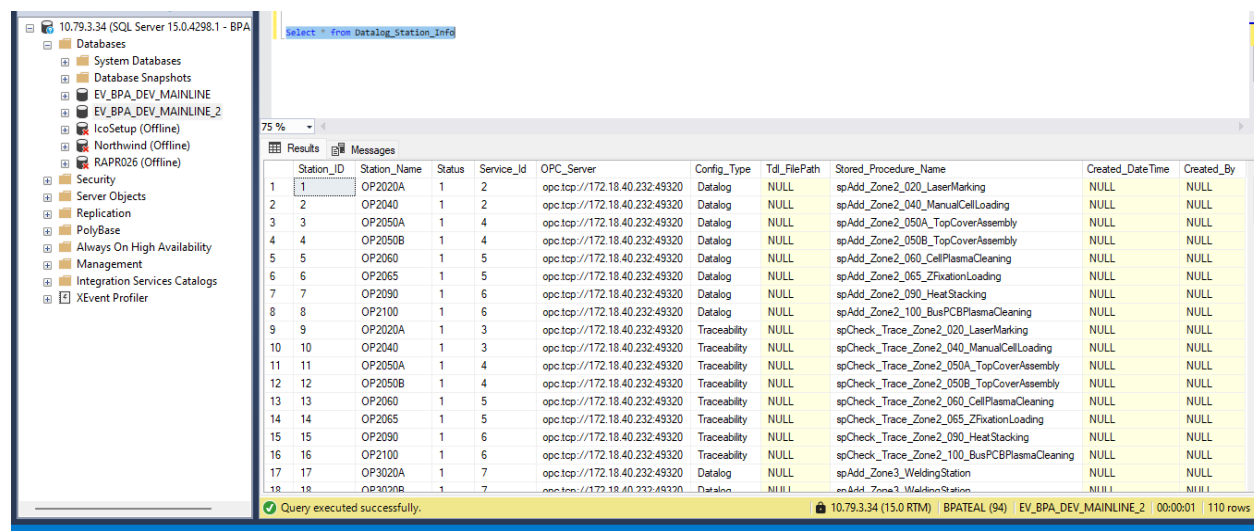
2.1 SQL Configuration

Steps to add a new station to data log or traceability service.

2.1.1 Add the Station Name, Set status as 1 , Service_Id of the corresponding service using, OPC_Server, Config_Type and the Stored procedure name using for executing the service in the table Datalog_Station_Info.

Key Points:

- Table Name: Datalog_Station_Info.
- Select * from Datalog_Station_Info. (Execute the query to identify which station corresponds to which service)



Station_ID	Station_Name	Status	Service_Id	OPC_Server	Config_Type	Td_FilePath	Stored_Procedure_Name	Created_DateTime	Created_By
1	OP2020A	1	2	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_020_LaserMarking	NULL	NULL
2	OP2040	1	2	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_040_ManualCellLoading	NULL	NULL
3	OP2050A	1	4	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_050A_TopCoverAssembly	NULL	NULL
4	OP2050B	1	4	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_050B_TopCoverAssembly	NULL	NULL
5	OP2060	1	5	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_060_CellPlasmaCleaning	NULL	NULL
6	OP2065	1	5	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_065_ZFixationLoading	NULL	NULL
7	OP2090	1	6	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_090_HeatStacking	NULL	NULL
8	OP2100	1	6	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone2_100_BusPCBPlasmaCleaning	NULL	NULL
9	OP2020A	1	3	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_020_LaserMarking	NULL	NULL
10	OP2040	1	3	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_040_ManualCellLoading	NULL	NULL
11	OP2050A	1	4	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_050A_TopCoverAssembly	NULL	NULL
12	OP2050B	1	4	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_050B_TopCoverAssembly	NULL	NULL
13	OP2060	1	5	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_060_CellPlasmaCleaning	NULL	NULL
14	OP2065	1	5	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_065_ZFixationLoading	NULL	NULL
15	OP2090	1	6	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_090_HeatStacking	NULL	NULL
16	OP2100	1	6	opc.tcp://172.18.40.232:49320	Traceability	NULL	spCheck_Trace_Zone2_100_BusPCBPlasmaCleaning	NULL	NULL
17	OP2020A	1	7	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone3_WeldingStation	NULL	NULL
18	OP2020B	1	7	opc.tcp://172.18.40.232:49320	Datalog	NULL	spAdd_Zone3_WeldingStation	NULL	NULL

2.1.2 Add the INI File Path in the table Datalog_Config_Info which includes columns Config_ID, Station_ID, Dtl_Handshake_Path, Dtl_Parameter_Path, Dtl_WriteData_Path.

Key Points:

- For Data log need to add Handshake Path, Parameter Path.
- For Traceability need to add Handshake Path, Parameter Path, WriteData Path .
- Select * from Datalog_Config_Info (Execute the query to ensure that the INI File Path is correct or not).
- Ensure that Station_ID in the table Datalog_Station_Info matches with the table Datalog_Config_Info.

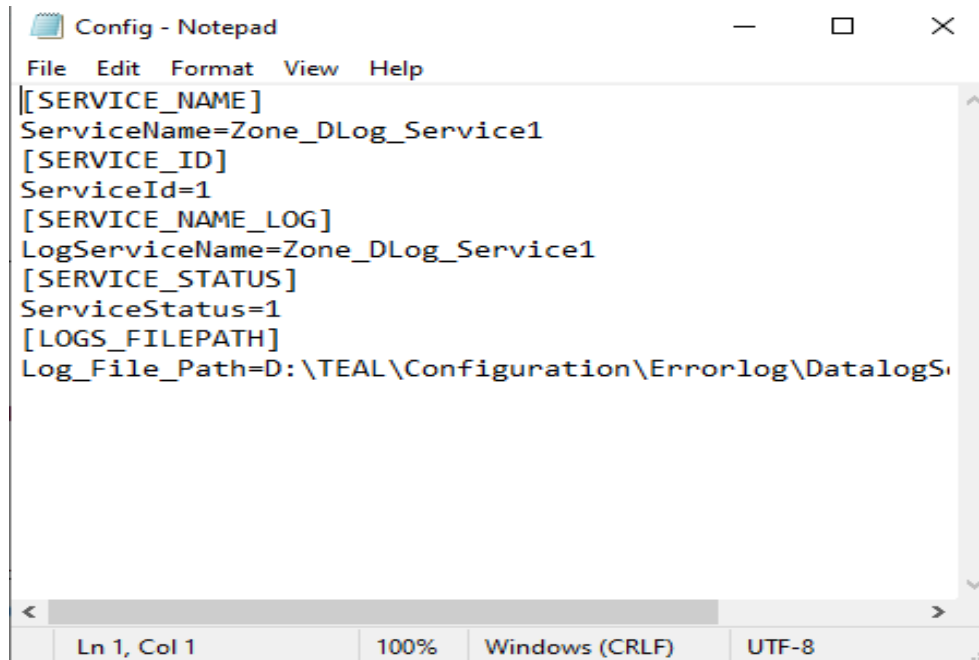
Config_ID	Station_ID	Dtl_Handshake_Path	Dtl_Parameter_Path	Dtl_WriteData_Path
1	1	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2020A_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2020A_Variable_Info_P...	NULL
2	2	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2040_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2040_Variable_Info_Par...	NULL
3	3	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2050A_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2050A_Variable_Info_P...	NULL
4	4	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2050B_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2050B_Variable_Info_P...	NULL
5	5	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2060_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2060_Variable_Info_Par...	NULL
6	6	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2065_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2065_Variable_Info_Par...	NULL
7	7	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2090_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2090_Variable_Info_Par...	NULL
8	8	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP2100_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP2100_Variable_Info_Par...	NULL
9	9	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2020A_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2020A_Variable_Info...	D:\TEAL\Configuration\Tags\...
10	10	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2040_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2040_Variable_Info...	D:\TEAL\Configuration\Tags\...
11	11	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2050A_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2050A_Variable_Info...	D:\TEAL\Configuration\Tags\...
12	12	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2050B_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2050B_Variable_Info...	D:\TEAL\Configuration\Tags\...
13	13	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2060_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2060_Variable_Info...	D:\TEAL\Configuration\Tags\...
14	14	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2065_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2065_Variable_Info...	D:\TEAL\Configuration\Tags\...
15	15	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2090_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2090_Variable_Info...	D:\TEAL\Configuration\Tags\...
16	16	D:\TEAL\Configuration\Tags\Traceability\Handshake\OP2100_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Traceability\Parameters\OP2100_Variable_Info...	D:\TEAL\Configuration\Tags\...
17	17	D:\TEAL\Configuration\Tags\Datalog\Handshake\OP3020A_Variable_Info_Handshake.INI	D:\TEAL\Configuration\Tags\Datalog\Parameters\OP3020A_Variable_Info_P...	NULL

2.2 Service Installation

Step1: Copy paste the required service in the folder

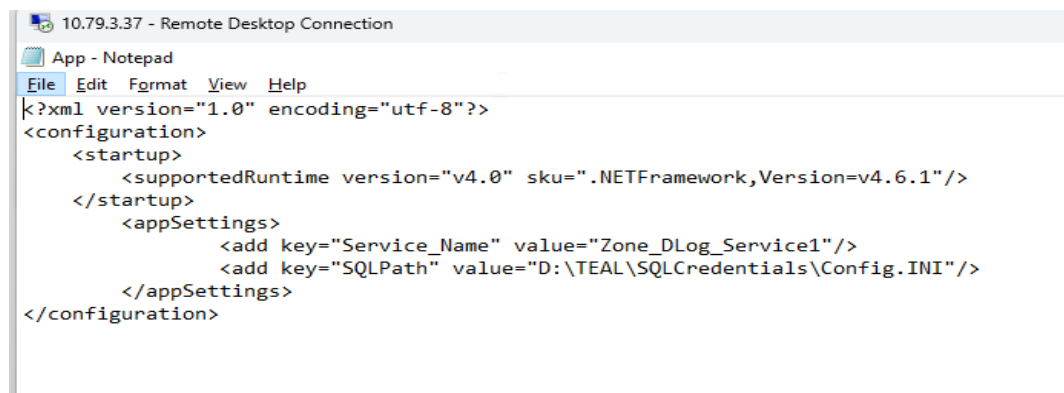
D:\TEAL\Application\Datalog\

Step2: Check /Change the Service_Name inside the config file



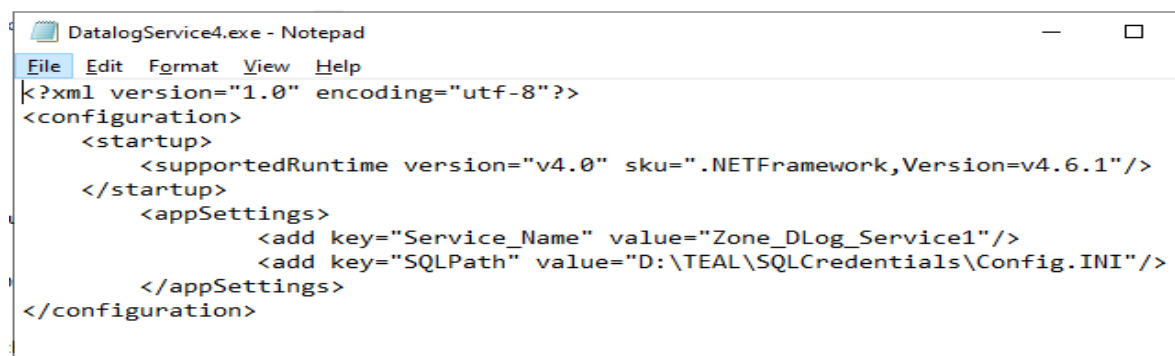
```
File Edit Format View Help
[SERVICE_NAME]
ServiceName=Zone_DLog_Service1
[SERVICE_ID]
ServiceId=1
[SERVICE_NAME_LOG]
LogServiceName=Zone_DLog_Service1
[SERVICE_STATUS]
ServiceStatus=1
[LOGS_FILEPATH]
Log_File_Path=D:\TEAL\Configuration>Errorlog\DataLogS,
```

Step3:Change the Service_Name inside the textfile named App



```
10.79.3.37 - Remote Desktop Connection
App - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.6.1"/>
  </startup>
  <appSettings>
    <add key="Service_Name" value="Zone_DLog_Service1"/>
    <add key="SQLPath" value="D:\TEAL\SQLCredentials\Config.INI"/>
  </appSettings>
</configuration>
```

Step4:Change the service Name inside the text file named Service.exe .



```
DatalogService4.exe - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <startup>
    <supportedRuntime version="v4.0" sku=".NETFramework,Version=v4.6.1"/>
  </startup>
  <appSettings>
    <add key="Service_Name" value="Zone_DLog_Service1"/>
    <add key="SQLPath" value="D:\TEAL\SQLCredentials\Config.INI"/>
  </appSettings>
</configuration>
```

Step5 : To install the service run the commands in the command prompt

```
cd C:\Windows\Microsoft.NET\Framework\v4.0.30319installutil.exe
D:\TEAL\Configuration\EXE\Services\Datalog\Service1\DatalogService1.exe
installutil.exe
D:\TEAL\Configuration\EXE\Services\Traceability\Service1\TraceabilityService1.
exe
```

2.3 INI File Configurations.

All the tags for Datalog, Traceability, shift, and Heartbeat should be configured in the path

1. D:\TEAL\Configurations\Tags\Datalog\
2. D:\TEAL\Configurations\Tags\Traceability\
3. D:\TEAL\Configurations\Tags\Shift\
4. D:\TEAL\Configurations\Tags\Heartbeat\

1. INI File for Handshake

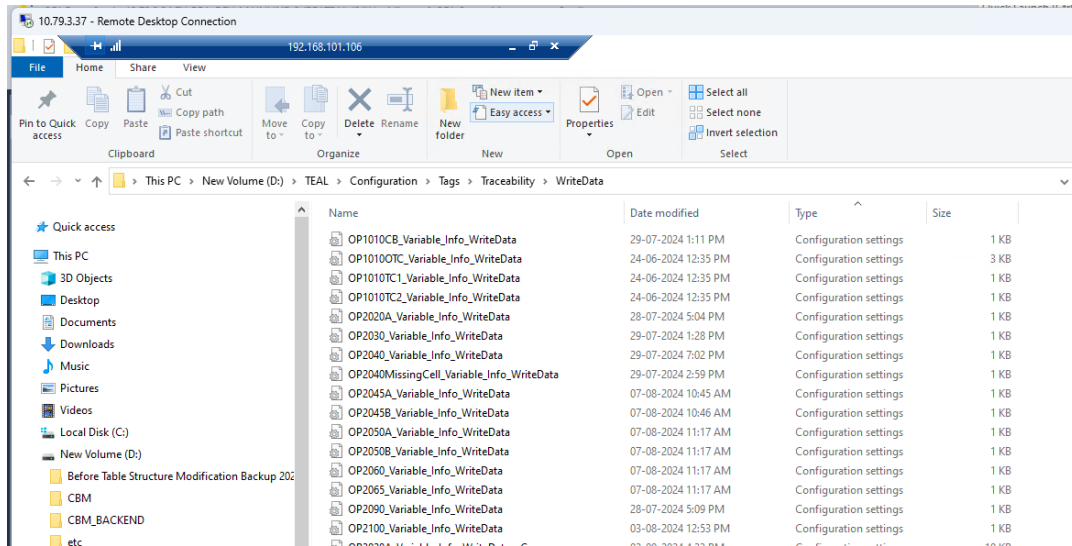
Naming Format: Handshake INI File name should be in the Format
StationName_Variable_Info_Handshake.ini

Name	Date modified	Type	Size
OP1010CB_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP1010OCV1_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP1010OCV2_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP1010OTC1_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP1010OTC2_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2020A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2030A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2040A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2040MC_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2045A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2045B_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2050A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2050B_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2060A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2060B_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2090A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP2100A_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP3020A_Variable_Info_Handshake	26-07-2024 12:14 PM	Configuration settings	1 KB
OP3020B_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB
OP3030A_Variable_Info_Handshake	26-07-2024 3:38 PM	Configuration settings	1 KB
OP3030B_Variable_Info_Handshake	24-06-2024 12:35 PM	Configuration settings	1 KB

Parameter INI File name should be in the Format
 StationName_Variable_Info_Parameter.ini

Name	Date modified	Type	Size
newtags	14-08-2024 9:34 AM	Text Document	8 KB
OP1010CB_Variable_Info_Parameter	24-06-2024 12:35 PM	Configuration sett...	1 KB
OP1010OCV1_Variable_Info_Parameter	24-06-2024 12:35 PM	Configuration sett...	11 KB
OP1010OCV2_Variable_Info_Parameter	24-06-2024 12:35 PM	Configuration sett...	11 KB
OP1010OTC1_Variable_Info_Parameter	24-06-2024 12:35 PM	Configuration sett...	2 KB
OP1010OTC2_Variable_Info_Parameter	24-06-2024 12:35 PM	Configuration sett...	2 KB
OP2020A_Variable_Info_Parameter	10-09-2024 9:55 AM	Configuration sett...	1 KB
OP2030A_Variable_Info_Parameter	24-06-2024 12:35 PM	Configuration sett...	1 KB
OP2040A_Variable_Info_Parameter	27-06-2024 4:10 PM	Configuration sett...	1 KB
OP2040MC_Variable_Info_Parameter	05-07-2024 6:53 PM	Configuration sett...	1 KB
OP2045A_Variable_Info_Parameter	03-08-2024 5:22 PM	Configuration sett...	2 KB
OP2045B_Variable_Info_Parameter	03-08-2024 5:23 PM	Configuration sett...	1 KB
OP2050A_Variable_Info_Parameter	03-08-2024 6:45 PM	Configuration sett...	6 KB
OP2050B_Variable_Info_Parameter	03-08-2024 6:02 PM	Configuration sett...	6 KB
OP2060A_Variable_Info_Parameter	03-08-2024 10:58 AM	Configuration sett...	1 KB
OP2060B_Variable_Info_Parameter	03-08-2024 11:49 AM	Configuration sett...	3 KB
OP2090A_Variable_Info_Parameter	03-08-2024 12:12 PM	Configuration sett...	1 KB
OP2100A_Variable_Info_Parameter	03-08-2024 12:46 PM	Configuration sett...	1 KB
OP3020A_Variable_Info_Parameter	07-08-2024 2:15 PM	Configuration sett...	12 KB
OP3020B_Variable_Info_Parameter	07-08-2024 2:18 PM	Configuration sett...	12 KB
OP3030A_Variable_Info_Parameter	27-08-2024 11:43 AM	Configuration sett...	12 KB

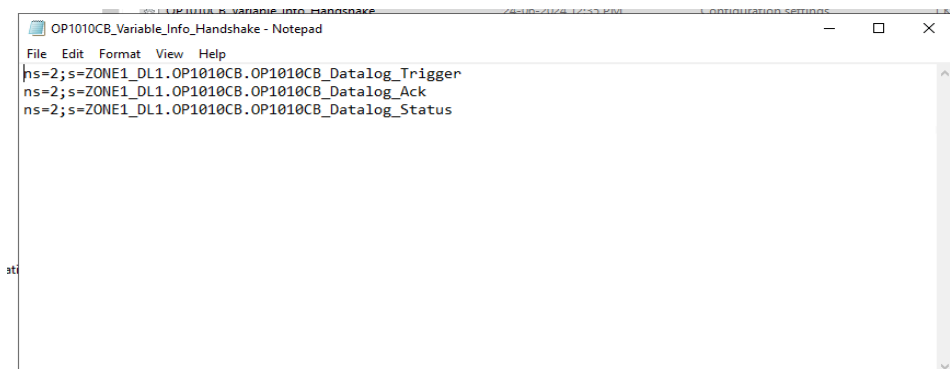
For Traceability Additionally WriteData INI File needed , the naming format
 should be StationName_Variable_Info_WriteData.ini



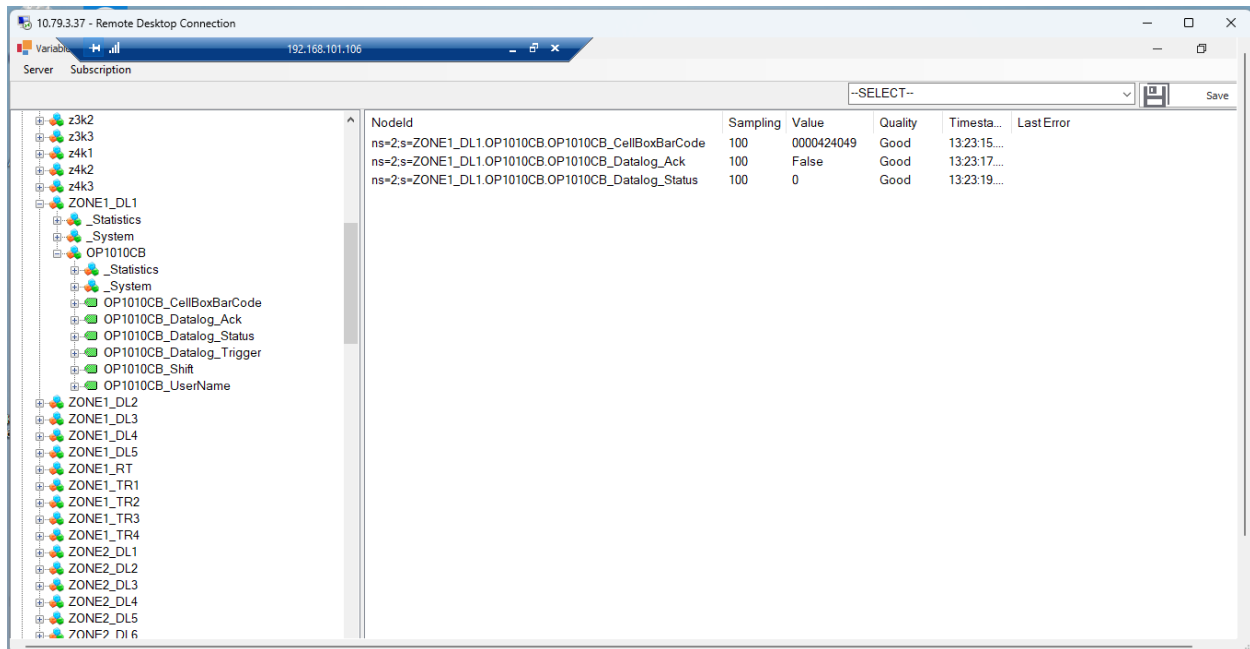
Example of Tag Address inside the INI File

ns=2;s=Zone1_DL1.OP1010CB.OP1010CB_Datalog_Trigger

ChannelName Device Name Tag Name



For Configuring the Tags we can use the Variable_Diagnostics EXE Application in the Path **D:\Software Backup\Variable_Diagnostics \OPC_Diagnostics**. Drag and drop the tags and save the tags.



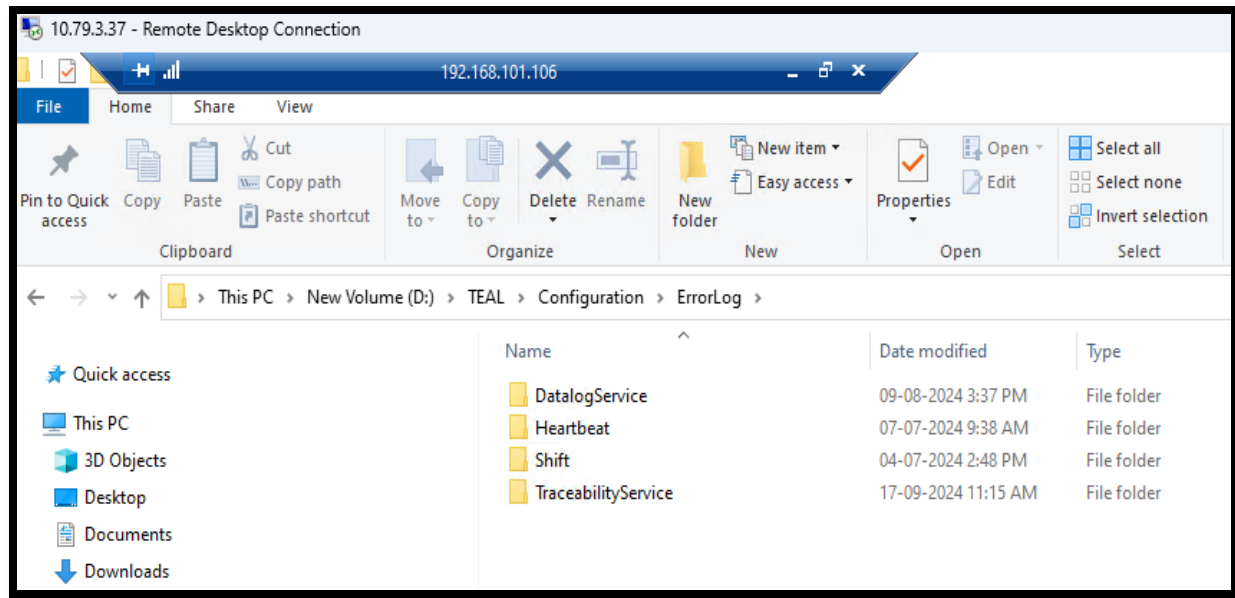
2.3 Monitoring the values

We can observe the live values in PLC using Kepware quick Client .

Step: Right click on corresponding device, then click on launch quick client

Item ID	Data Type	Value	Timestamp	Quality	Update C
ZONE34_DL1.OP3020A.OP3020B.OP3020A_BatteryStackBarCodeData	String	RJ692920005A	13:38:22.735	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_BusBarHeight	Short	1	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_BusBarPresence	Short	1	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_CurrentPeak_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_CurrentPeak_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_CurrentRMS_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_CurrentRMS_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_VoltagePeak_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_VoltagePeak_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_VoltageRMS_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_VoltageRMS_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_WeldS3_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_WeldS3_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_WeldS6_Max	Float	0	13:38:22.658	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_WeldS6_Min	Float	0	13:38:22.658	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_X_CoOrdinate_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_X_CoOrdinate_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_Y_CoOrdinate_Max	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_Cell_Y_CoOrdinate_Min	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_CellI01_CurrentPeak	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_CellI01_CurrentRMS	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_CellI01_Result	Short	0	13:38:22.658	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_CellI01_VoltagePeak	Float	0	13:38:22.578	Good	1
ZONE34_DL1.OP3020A.OP3020B.OP3020A_CellI01_VoltageRMS	Float	0	13:38:22.578	Good	1

To Observe when the trigger occurred and what is the status code return to the PLC from the PLC using the errorlog and the functioning of services in the Folder **D:\TEAL\Configuration\Errorlog**



Error Log

```

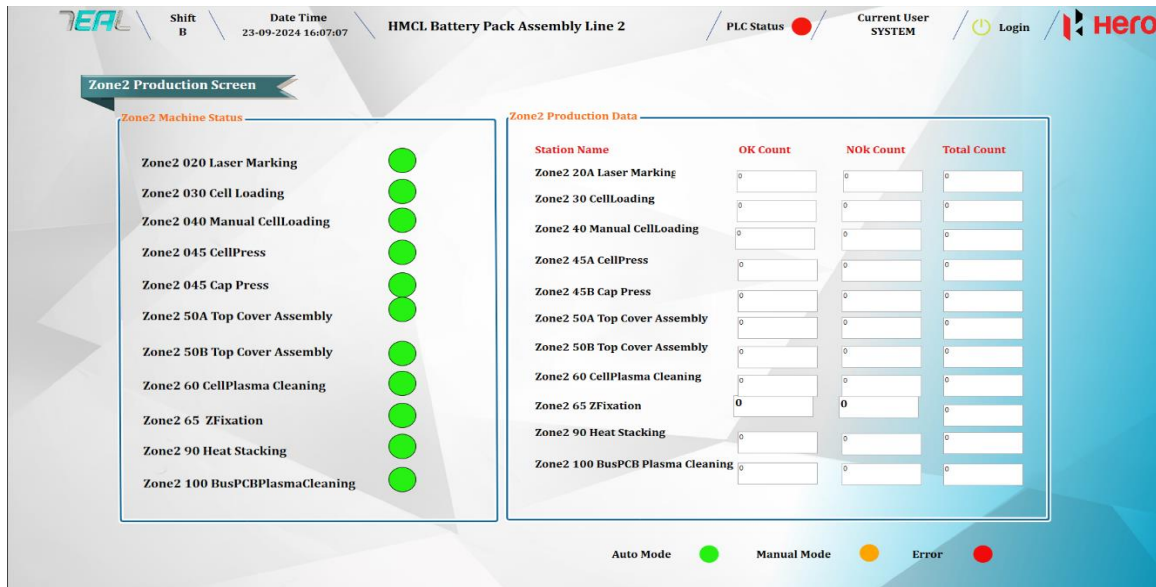
:102,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:840,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:123,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:447,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:783,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:054,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:382,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:692,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:994,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:300,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:633,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:941,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:248,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:542,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:845,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,TRUE
:859,VSTA,OP3060 Reading Parameter Value,Traceability_Trigger,Reading parameter value done for Barcode: ,RJ6427200090
:963,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 SQL Validation 1,SQL Checking completed for Barcode: RJ6427200090 Acknowledge: True and Status: 1 Write to PLC
:280,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,TRUE
:594,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,TRUE
:924,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:174,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 PLC Write Reset Done,Acknowledge: False and Status: 0 write to PLC
:596,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:804,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:070,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:419,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE
:721,VSTA,Traceability_Trigger,Zone_TLog_Service15,OP3060 Reading Handshake Value ,FALSE

```

3.SCADA Dashboard Screen

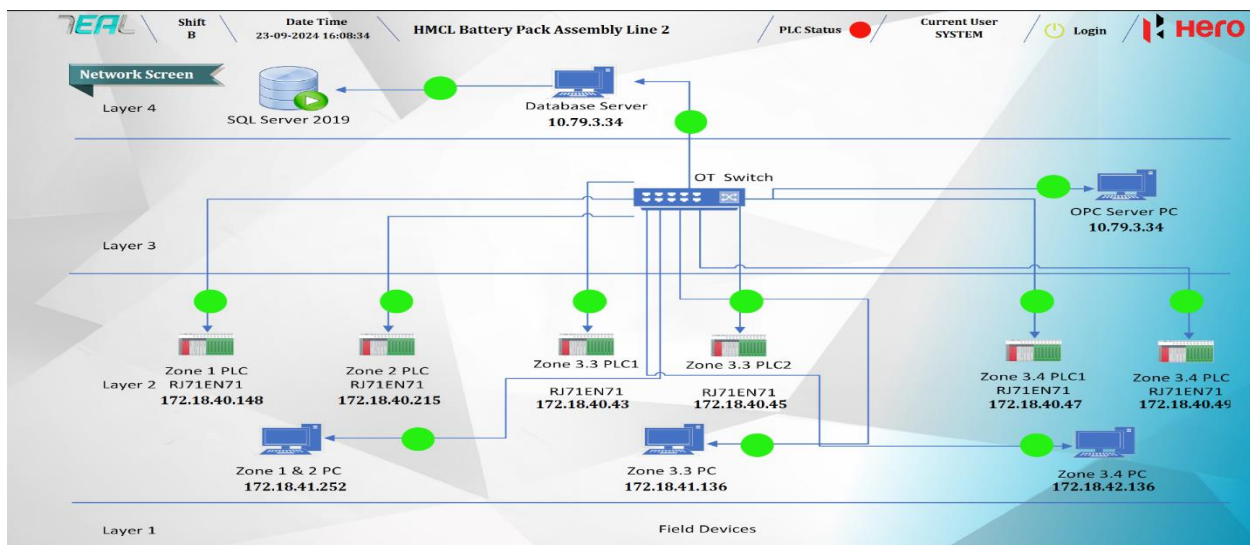
3.1 Zone wise Production screen

The screen contains zone wise machine status , Ok count Nok Count , Total count of each stations.



3.2 Network Screen

The screen show network architecture and PLC Communication .



3.3 Alarm Screen

The screen which shows the active alarms .

The screenshot shows the 'Alarm Screen' interface. At the top, there is a header bar with the following information: Shift B, Date Time 23-09-2024 16:08:04, HMCL Battery Pack Assembly Line 2, PLC Status (indicated by a red dot), Current User SYSTEM, and a Login button. The main content area is titled 'Alarm Screen' and contains a table of active alarms. The table has five columns: Alarm Type, Alarm Description, Start Time, IP Address, and Register. Below the table, there is a button labeled 'Alarm Count - 14'.

Alarm Type	Alarm Description	Start Time	IP Address	Register
Device	Zone1/010/Scanner1/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.00
Device	Zone1/010/Scanner2/Device ReadError	2024-09-23 16:08:05.166	192.168.3.9	1552.01
Device	Zone1/010/Scanner3/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.02
Device	Zone1/010/Scanner4/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.03
Device	Zone1/010/Scanner5/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.04
Device	Zone1/010/Scanner6/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.05
Device	Zone1/010/Scanner7/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.06
Data	Zone1/010/BatteryStackBarcode not valid	2024-09-23 16:08:05.166		
Data	Zone1/020/Table Insertion Failed	2024-09-23 16:08:05.166		
Device	Zone1/010/Scanner10/Device Disconnected	2024-09-23 16:08:05.166	192.168.3.9	1552.09
Data	PLC Disconnected	2024-09-23 16:08:05.166		
Data	VMServer Cluster Disconnected	2024-09-23 16:08:05.166		
Data	Database Server Disconnected	2024-09-23 16:08:05.166		
Data	SQL DB Disconnected	2024-09-23 16:08:05.166		

3.4 Curing Time Setting Screen

We can set the curing time in required stations using the screen. Only admin and developer login have the access to edit the curing time. Other users only can view the curing time.

The screenshot shows the 'Curing Time Setting' interface. At the top, there is a header bar with the following information: Shift B, Date Time 23-09-2024 16:08:20, HMCL Battery Pack Assembly Line 2, PLC Status (indicated by a red dot), Current User SYSTEM, and a Login button. The main content area is titled 'Curing Time Setting' and contains a form for setting curing times. The form has the following fields: Station Name (dropdown menu), Curing Time (text input field), and Edit the Curing Time (text input field). Below the form, there are three buttons: 'Update Curing Time', 'Refresh', and 'Display Curing Time Settings'.

3.5 Report Screen

The Report Screen will redirect to an report exe application which we can see the station wise report.

Date Time	Shift	Zone Name	Station Name	Stack Barcode	FPC-P1(Milli Ohm)	FPC-P2(Milli Ohm)	FPC-P
9/20/2024	B	3.3	OP 3050	R3642720008E	0.481	0.744	
9/20/2024	B	3.3	OP 3050	R36027200087	0.512	0.77	
9/20/2024	B	3.3	OP 3050	R36127200088	0.526	0.759	
9/21/2024	A	3.3	OP 3050	R36327200099	0.552	0.769	
9/21/2024	A	3.3	OP 3050	R36127200097	0.493	0.758	
9/21/2024	A	3.3	OP 3050	R3642720009D	0.497	0.783	
9/21/2024	A	3.3	OP 3050	R3622720009B	0.518	0.771	
9/21/2024	A	3.3	OP 3050	R3632720009C	0.497	0.748	
9/21/2024	A	3.3	OP 3050	R3662720009F	0.51	0.766	
9/21/2024	B	3.3	OP 3050	R362272000A0	0.702	0.754	
9/21/2024	B	3.3	OP 3050	R363272000A1	0.505	0.711	
9/21/2024	B	3.3	OP 3050	R364272000A2	0.49	0.742	
9/21/2024	B	3.3	OP 3050	R365272000A3	0.467	0.698	
9/21/2024	B	3.3	OP 3050	R3652720008F	0.503	0.733	
9/21/2024	A	3.3	OP 3050	R36227200098	0.498	0.79	
9/21/2024	B	3.3	OP 3050	R366272000A4	0.501	0.755	
9/20/2024	B	3.3	OP 3050	R36227200089	0	0.734	
9/20/2024	B	3.3	OP 3050	R3612720008B	0.588	0.747	
9/20/2024	B	3.3	OP 3050	R36427200090	0.496	0.735	
9/20/2024	B	3.3	OP 3050	R3622720008C	0.5	0.656	
9/20/2024	B	3.3	OP 3050	R36527200091	0.529	0.771	
9/20/2024	B	3.3	OP 3050	R36627200092	0.607	0.765	
9/20/2024	B	3.3	OP 3050	R36727200093	0.496	0.656	
9/20/2024	B	3.3	OP 3050	R36827200094	0.45	0.796	

4.Basic Trouble Shooting

4.1 SCADA Status Code

The given below are the status code used for data log and traceability.

Traceability Code & Description	
1	Success
2	Station Already Processed
3	Previous Station Not Processed
4	Nomen / Invalid Barcode
5	Barcode Length Mismatch
6	Previous Station Not Ok
7	Barcode Null
8	Cell Grade Fail
9	Not Applicable
10	Cell Testing Not Done

Data log Code & Description	
1	Success
2	Station Already Processed
3	Not Applicable
4	Nomen / Invalid Barcode
5	Barcode Length Mismatch
6	Not Applicable
7	Barcode Null
8	Not Applicable
9	Store Procedure / Table Insertion Failed
10	Not Applicable

11	Curing Hour Fail
99	SCADA program Error
12	Rework Choosed and Current Station Not Processed
13	Elgible for Rework
14	Not Elgible for rework
15	Defect code found 0 for the BatteryStack Id

11	Not Applicable
99	SCADA program Error
17	ZfixationBarcodeNomenclature failure
16	ZFixationBarcodeLength failure

4.1 Troubleshooting method

1. If the status code is 9 we can check what is the cause of error in Datalog_db_Error table.
2. If the status code is 99, It should be the issue with tag address, we have to check the tag address in INI File matches with tag address in kepware. Also, there is chance to occur 99 error because of abnormal values. Eg: letter in float values.
3. Scada communication error because of any disturbance in PLC. To establish communication, we have to restart the Zonewise- Heartbeat services in opc server.
4. If we do any kind of restarting or reinitializing in Kepware , we have to restart all the Scada services in the opc server.

