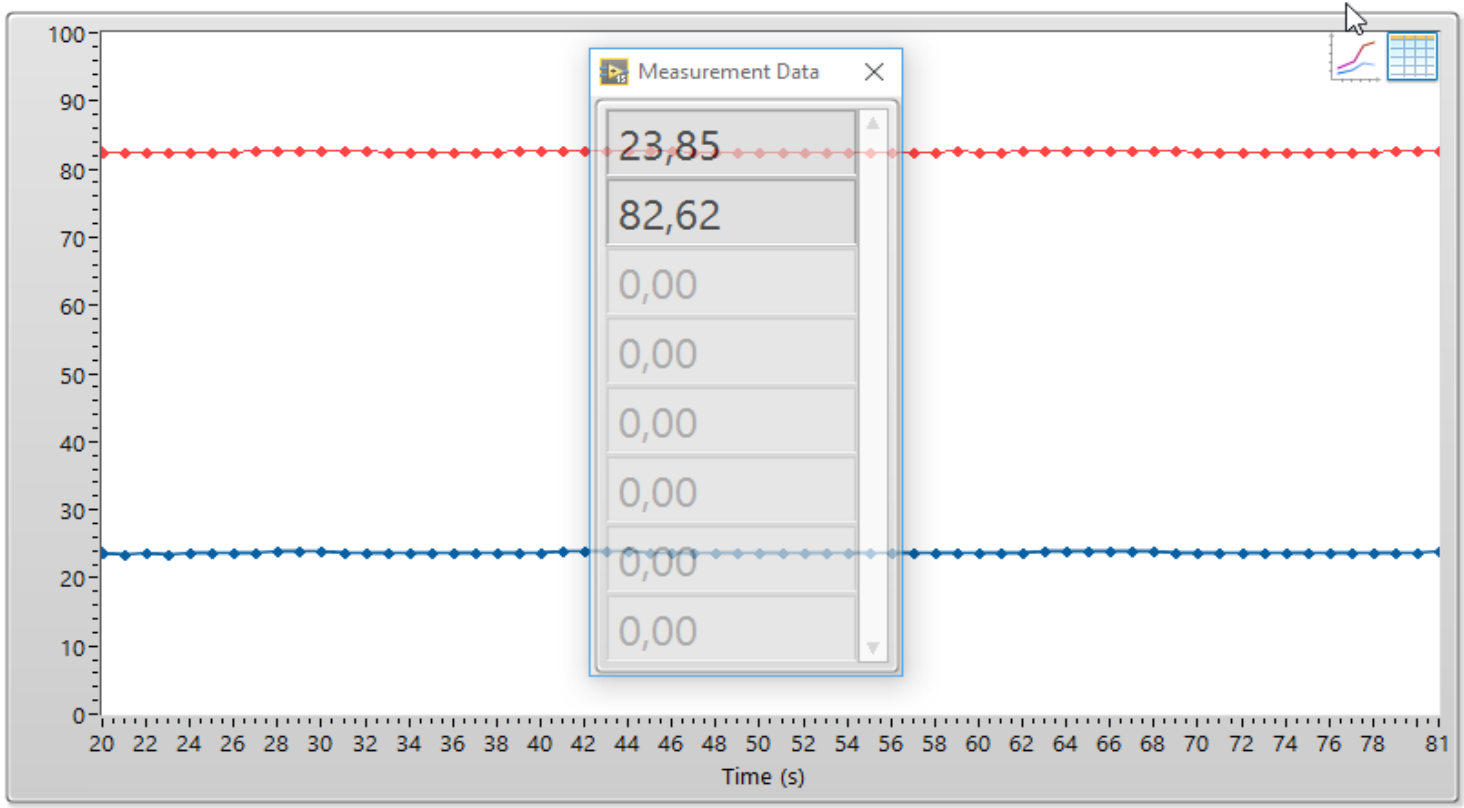
Data Logging and Monitoring

Hans-Petter Halvorsen, M.Sc.

Data Logging and Monitoring

Chart | Data | Channel Settings | Logging | Help

2016-06-02 09:40:54



- [x] Temperature
- [x] Battery
- [ ] Pressure
- [ ] Channel 3
- [ ] Channel 4
- [ ] Channel 5
- [ ] Channel 6
- [ ] Channel 7
- [ ] Channel 8
- [ ] Channel 9
- [ ] Channel 10
- [ ] Channel 11
- [ ] Channel 12
- [ ] Channel 13
- [ ] Channel 14
- [ ] Channel 15

Start DAQ | Stop DAQ | Save Configuration Data | Exit

Data Logging and Monitoring

With this Data Logging and Monitoring App you can Log and Monitoring Data from a DAQmx DAQ Device from National Instruments. Examples of Such DAQ Devices are USB-6001, USB-6008, USB-6009, myDAQ, etc.

You can log up till 32 Channels simultaneously (depending on the DAQ device you are using).

Logging Options:

- Log Data to File (*lvm Files)
- Log Data to Microsoft SQL Server Database, either Locally or Remote. With this option you need to have access to the Database from this Computer.
- Log Data to a remote Data Cloud Service

You can use an existing SQL Server or install a new SQL Server either on this computer or in a network or Internet.

Microsoft SQL Server Express can be downloaded for free on Internet.

Data Monitoring:

You can also use the "Data Dashboard for LabVIEW App" on iPad or Android devices in order to Monitor the Data you are Logging.

Get Help

Hans-Petter Halvorsen, M.Sc.

Data Logging and Monitoring

Chart | Data | Channel Settings | Logging | Database | Help

Current Time: 2016-05-25 12:37:00

With this Data Logging and Monitoring App you can Log and Monitoring Data from a DAQmx DAQ Device from National Instruments. Examples of Such DAQ Devices are USB-6001, USB-6008, USB-6009, etc.
You can log up till 8 Channels simultaneously.

Logging Options:
1. Log Data to File (*lvm Files)

2. Log Data to Microsoft SQL Server Database, either Locally or Remote. With this option you need to have access to the Database from this Computer.

You can use an existing SQL Server or install a new SQL Server either on this computer or in a network or Internet. Microsoft SQL Server Express can be downloaded for free on Internet.

Data Monitoring:
You can also use the "Data Dashboard for LabVIEW App" on iPad or Android devices in order to Monitor the Data you are Logging.

Data Dashboard for LabVIEW

Video | Help | Home

Start DAQ | Stop DAQ

Save Configuration Data | Exit

Monitoring

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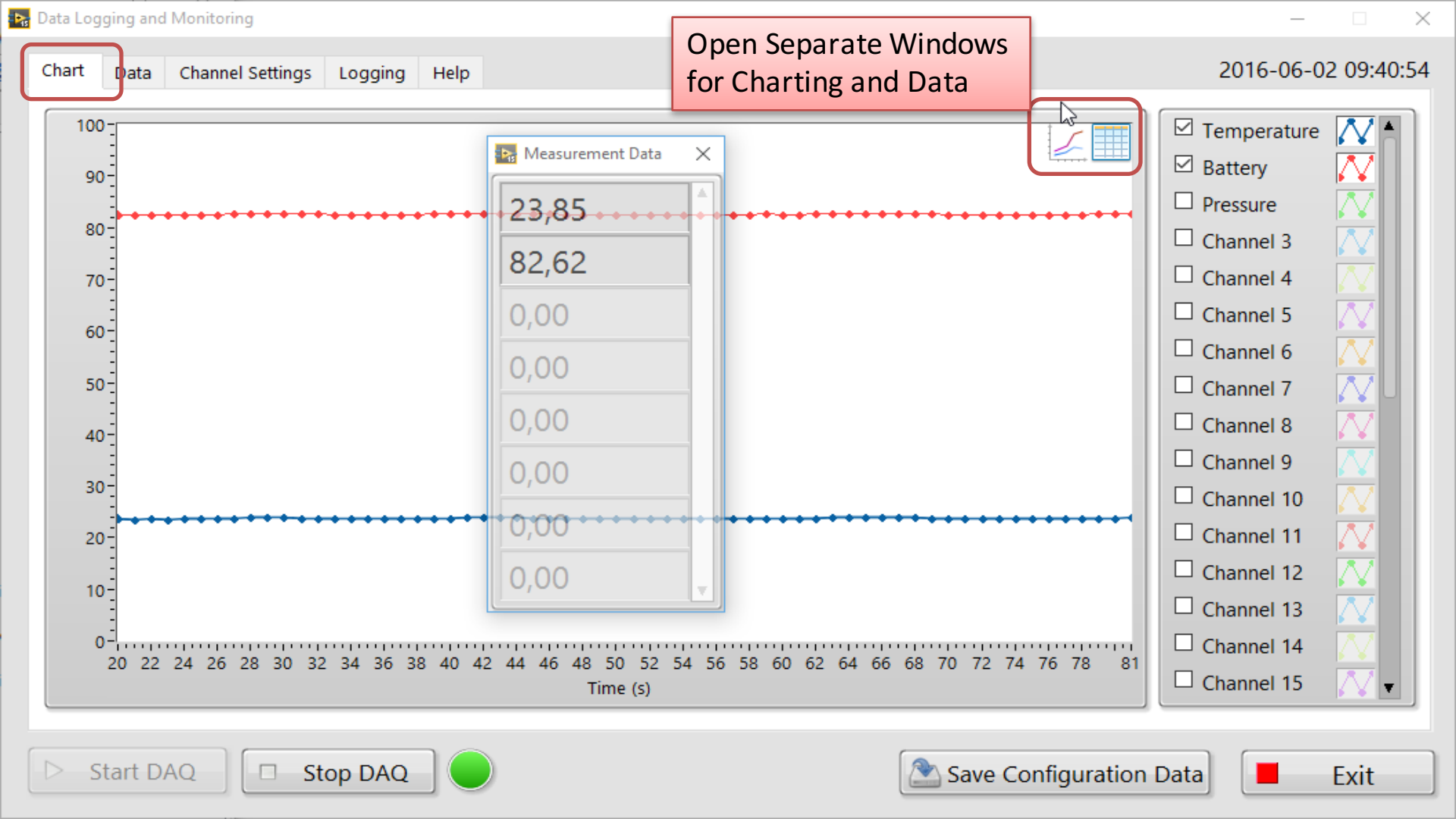
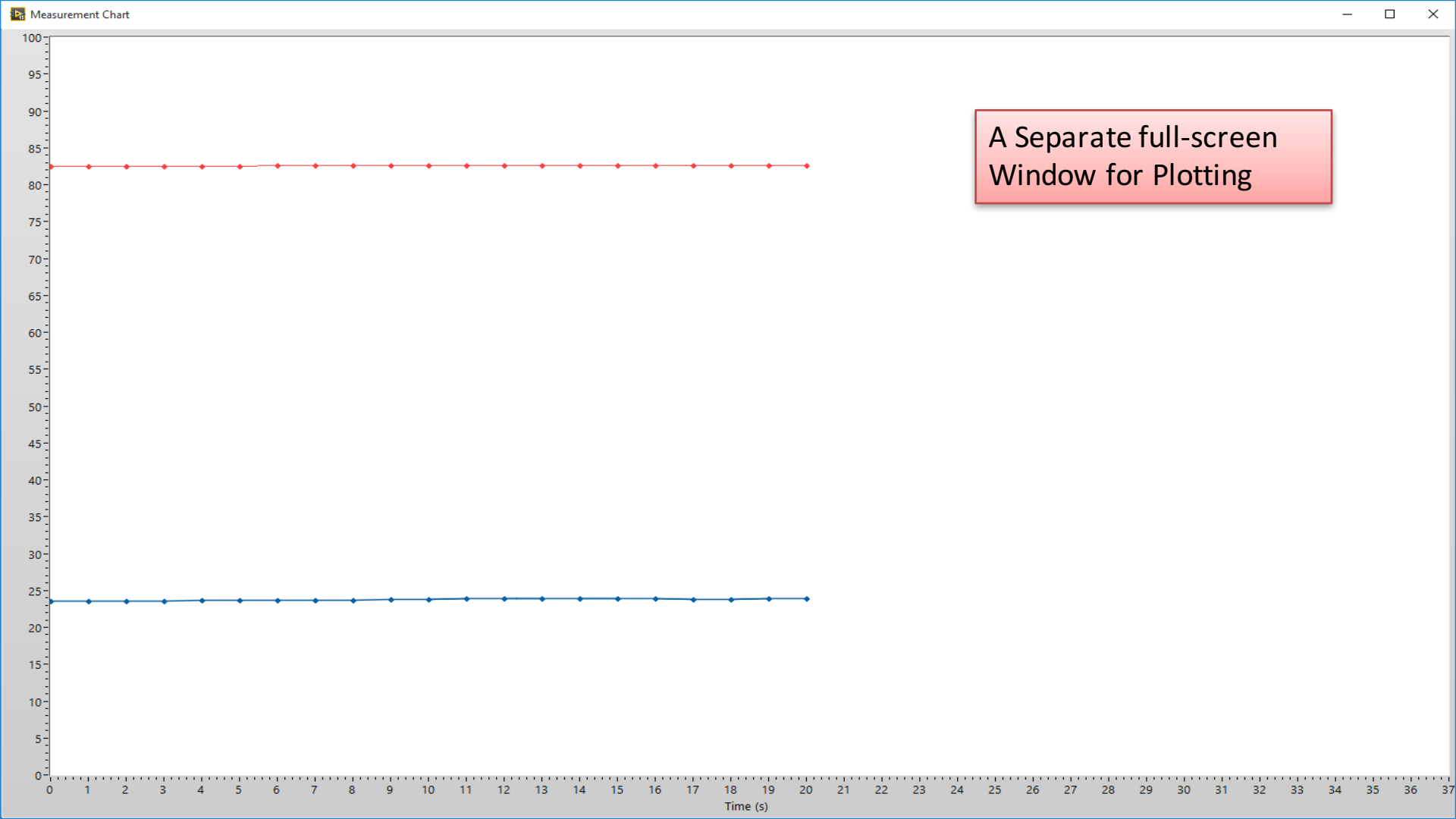
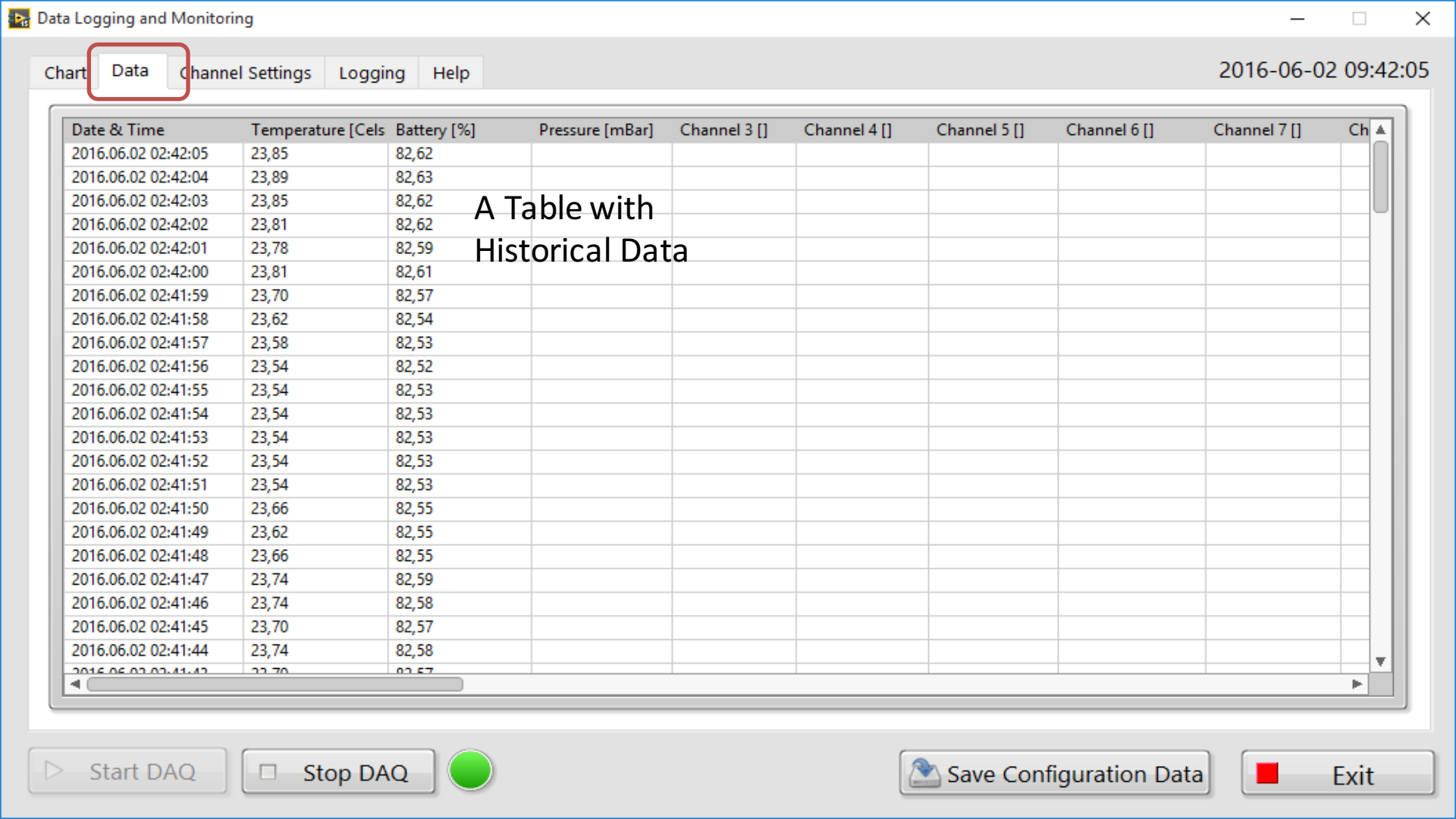

Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Help
Open Separate Windows for Charting and Data
2016-06-02 09:40:54
Measurement Data
23,85
82,62
0,00
0,00
0,00
0,00
0,00
0,00
Temperature
Battery
Pressure
Channel 3
Channel 4
Channel 5
Channel 6
Channel 7
Channel 8
Channel 9
Channel 10
Channel 11
Channel 12
Channel 13
Channel 14
Channel 15
Time (s)
Start DAQ
Stop DAQ
Save Configuration Data
Exit

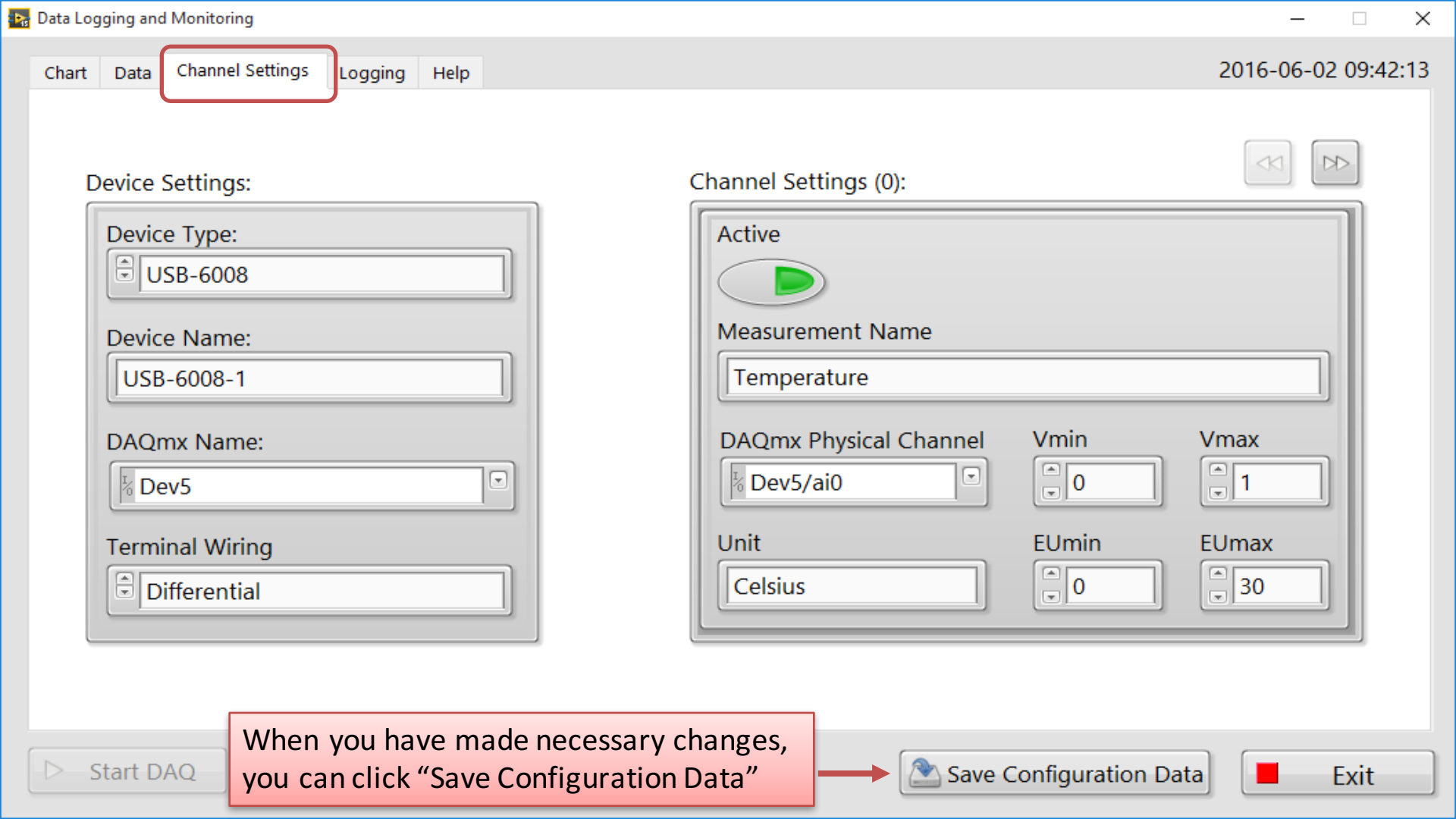

Measurement Chart
A Separate full-screen Window for Plotting
Time (s)

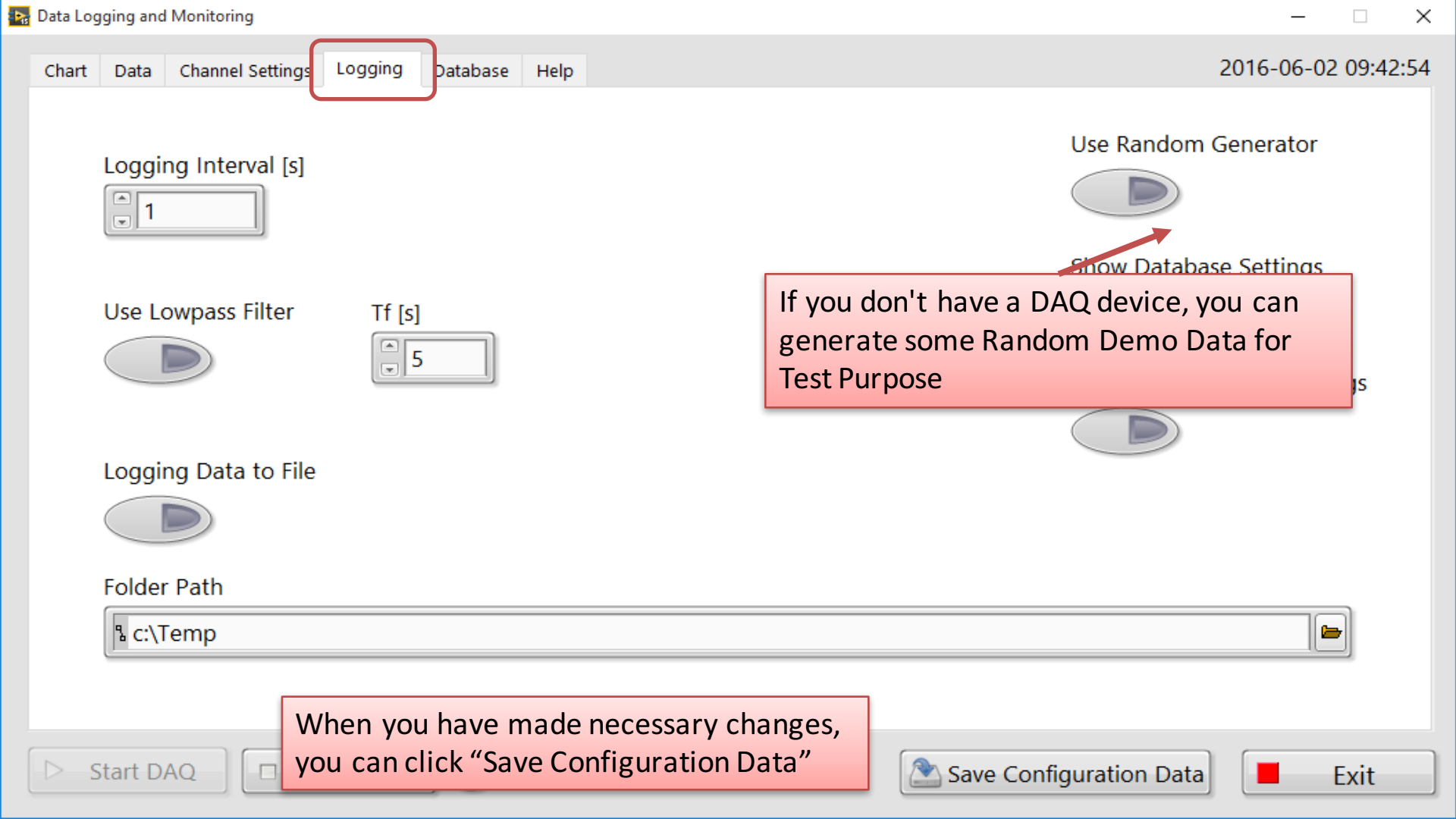


Date & Time	Temperature [Cels	Battery [%]	Pressure [mBar]	Channel 3 []	Channel 4 []	Channel 5 []	Channel 6 []	Channel 7 []	Ch
2016.06.02 02:42:05	23,85	82,62							
2016.06.02 02:42:04	23,89	82,63							
2016.06.02 02:42:03	23,85	82,62							
2016.06.02 02:42:02	23,81	82,62							
2016.06.02 02:42:01	23,78	82,59							
2016.06.02 02:42:00	23,81	82,61							
2016.06.02 02:41:59	23,70	82,57							
2016.06.02 02:41:58	23,62	82,54							
2016.06.02 02:41:57	23,58	82,53							
2016.06.02 02:41:56	23,54	82,52							
2016.06.02 02:41:55	23,54	82,53							
2016.06.02 02:41:54	23,54	82,53							
2016.06.02 02:41:53	23,54	82,53							
2016.06.02 02:41:52	23,54	82,53							
2016.06.02 02:41:51	23,54	82,53							
2016.06.02 02:41:50	23,66	82,55							
2016.06.02 02:41:49	23,62	82,55							
2016.06.02 02:41:48	23,66	82,55							
2016.06.02 02:41:47	23,74	82,59							
2016.06.02 02:41:46	23,74	82,58							
2016.06.02 02:41:45	23,70	82,57							
2016.06.02 02:41:44	23,74	82,58							

Configuration

Hans-Petter Halvorsen, M.Sc.


Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Help
2016-06-02 09:42:13
Device Settings:
Device Type:
USB-6008
Device Name:
USB-6008-1
DAQmx Name:
Dev5
Terminal Wiring
Differential
Channel Settings (0):
Active
Measurement Name
Temperature
DAQmx Physical Channel
Dev5/ai0
Vmin
0
Vmax
1
Unit
Celsius
EUmin
0
EUmax
30
Start DAQ
When you have made necessary changes, you can click “Save Configuration Data”
Save Configuration Data
Exit


Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Database
Help
2016-06-02 09:42:54
Logging Interval [s]
1
Use Random Generator
Show Database Settings
If you don't have a DAQ device, you can generate some Random Demo Data for Test Purpose
Use Lowpass Filter
Tf [s]
5
Logging Data to File
Folder Path
c:\Temp
When you have made necessary changes, you can click “Save Configuration Data”
Start DAQ
Save Configuration Data
Exit

The settings are stored in a Configuration File

You can change the Setting from the GUI or directly in the Configuration File

DAQSettings.ini - Notepad

File Edit Format View Help

```
[DAQ]
DeviceType = "USB-6008"
DeviceName = "USB-6008-1"
DAQmxName = "Dev5"
TerminalWiring = "Differential"

[Logging]
LoggingInterval = 1,000000
UseFilter = FALSE
LogToFile = TRUE
LogToDatabase = FALSE

[LogFile]
LogFilePath = "/c/Temp/Data.lvm"

[Database]
DSN = "HANSPH_LAPTOP\\SQLEXPRESS"
Database = "MEASUREMENTS"
UserName = "sa"
Password = "Ullabella72"

[Channel0]
MeasurementName = "Temperature"
ChannelActive = TRUE
PhysicalChannel = "Dev5/ai0"
ChannelVmin = 0,000000
ChannelVmax = 1,000000
Unit = "Celsius"
ChannelEUmin = 0,000000
ChannelEUmax = 30,000000
```

Database

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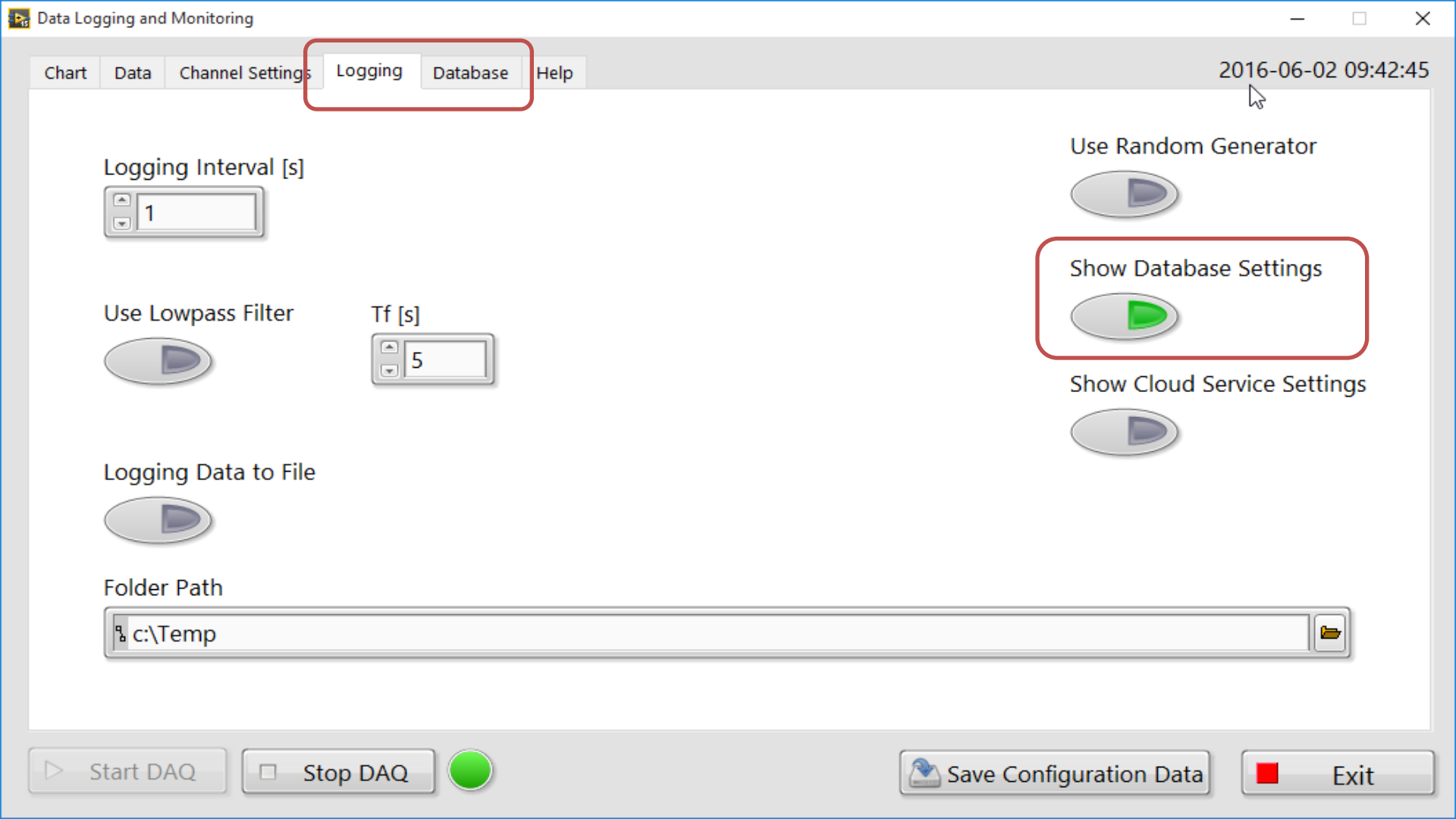
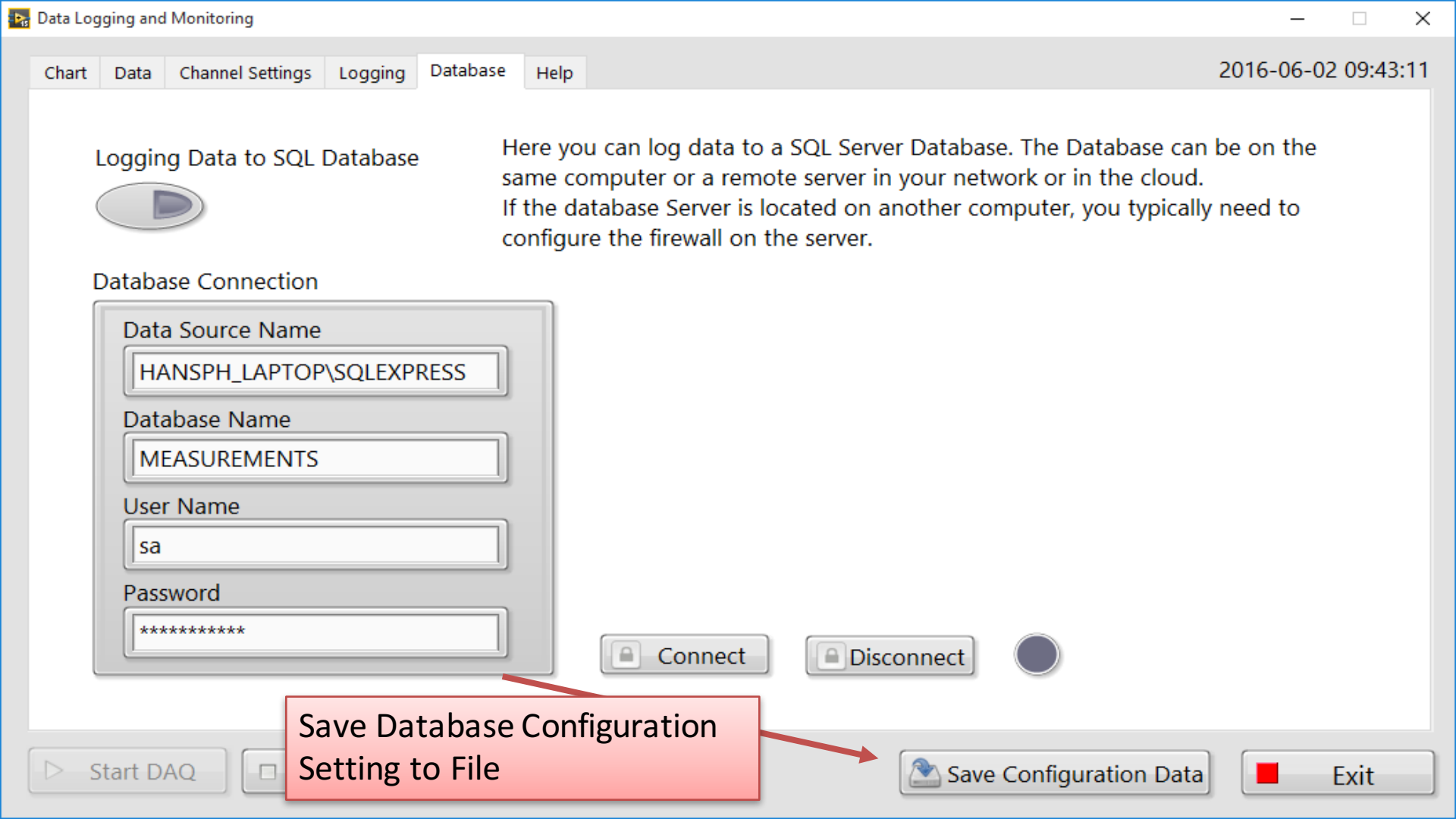

Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Database
Help
2016-06-02 09:42:45
Logging Interval [s]
1
Use Random Generator
Show Database Settings
Use Lowpass Filter
Tf [s]
5
Show Cloud Service Settings
Logging Data to File
Folder Path
c:\Temp
Start DAQ
Stop DAQ
Save Configuration Data
Exit


Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Database
Help
2016-06-02 09:43:11
Logging Data to SQL Database
Here you can log data to a SQL Server Database. The Database can be on the same computer or a remote server in your network or in the cloud.
If the database Server is located on another computer, you typically need to configure the firewall on the server.
Database Connection
Data Source Name
HANSPH_LAPTOP\SQLEXPRESS
Database Name
MEASUREMENTS
User Name
sa
Password
****
Connect
Disconnect
Save Database Configuration Setting to File
Start DAQ
Save Configuration Data
Exit

SQL Server

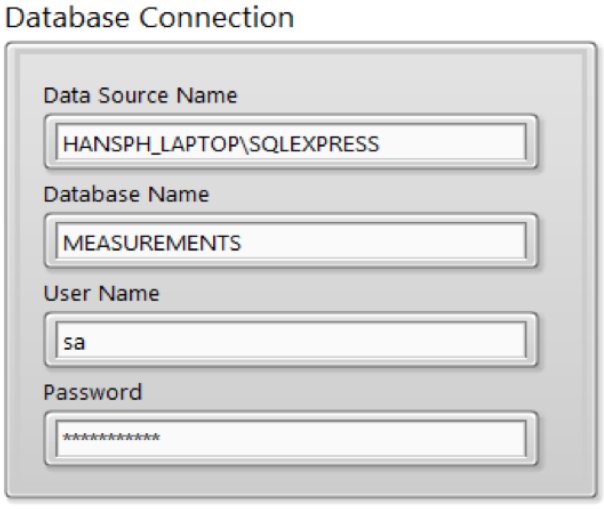
- You can Log Data to Microsoft SQL Server Database, either Locally or Remote.
- With this option you need to have access to the Database from this Computer.
- If you want to log data to a SQL Server, you can use an existing SQL Server or Download SQL Server Express for free

SQL Script

Database.sql

When you have installed SQL Server, you need to run the “Database.sql” Script in order to create necessary Tables, etc.

Then Connect to the Database and you are ready:



Database.sql - HAN...P\Hans-Petter (51))

```
/*****************************************************************************************/
/*Tables.sql*/
/*****************************************************************************************/

CREATE TABLE [MEASUREMENT]
(
    [MeasurementId]      int  NOT NULL  IDENTITY ( 1,1 ) Primary Key,
    [MeasurementName]    varchar(50)  NOT NULL UNIQUE

)
go

CREATE TABLE [MEASUREMENTDATA]
(
    [MeasurementDataId]  int  NOT NULL  IDENTITY ( 1,1 ) Primary Key,
    [MeasurementId]      int  NOT NULL Foreign Key REFERENCES MEASUREMENT(MeasurementId),
    [MeasurementTimeStamp] datetime  NOT NULL ,
    [MeasurementValue]   float  NOT NULL
)
go


/*****************************************************************************************/
/*GetMeasurementData.sql*/
/*****************************************************************************************/
IF EXISTS (SELECT name
       FROM   sysobjects
       WHERE  name = 'GetMeasurementData'
       AND    type = 'V')
    DROP VIEW GetMeasurementData
GO

CREATE VIEW GetMeasurementData
AS

SELECT
MEASUREMENTDATA.MeasurementDataId,
```

Web Service

Hans-Petter Halvorsen, M.Sc.

Data Web Service

The Port is default “8002”, but can be changed in a Configuration File

<IP Address>:<Port>/DataWS/<Web Service Method>

“DataWS” is the Name of the existing Web Service

AvailableWeb Service Methods

- GetChannel?Channel={value}
  - Gets the Current Value for the spesific Channel
- GetData
  - Get the Current Values for All Channels

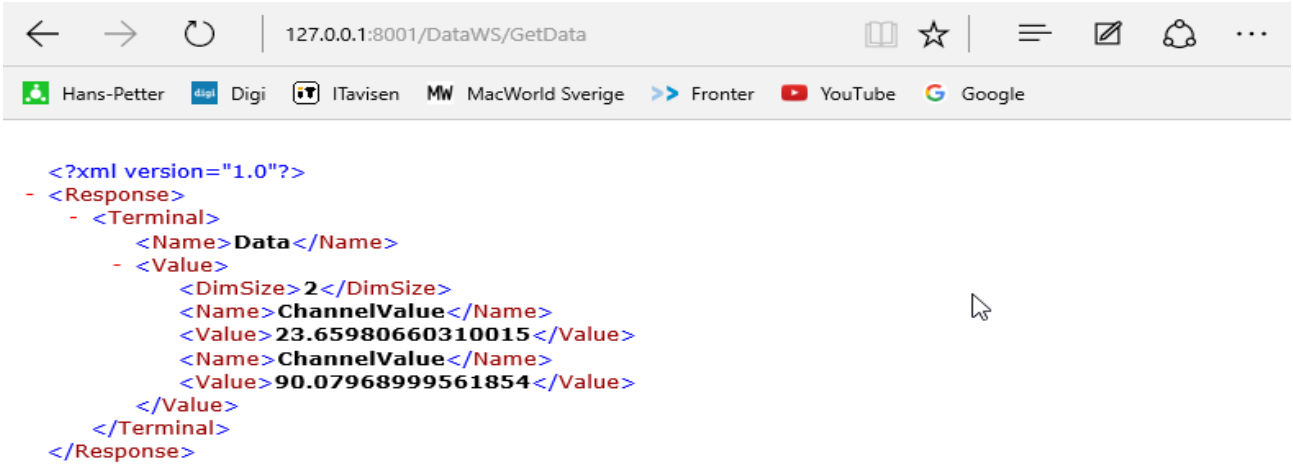
Web Service Example

<IP Address>:<Port>/GetChannel?Channel=1

Web Service Example

<IP Address>:<Port>/GetChannel?Channel=2

Web Service Example



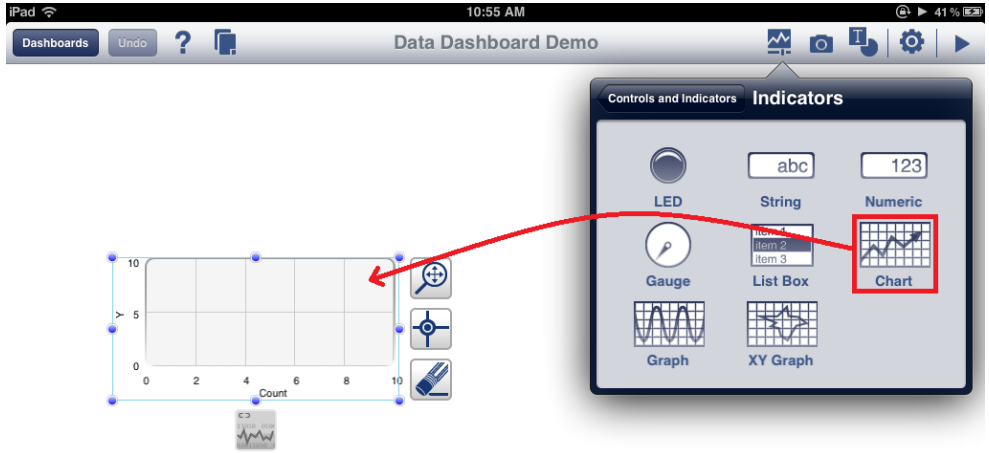
<IP Address>:<Port>/GetData

Data Dashboard for LabVIEW

Hans-Petter Halvorsen, M.Sc.


iPad
6:11 PM
64%
Dashboards
New Dashboard
Production Monitor
System State
abc
Process Variables
Timer
Back
Indicators
LED
String
Numeric
Gauge
List Box
Chart
Graph
XY Graph
Test Name
UUT
0
Start
Stop
Reset
Fan On/Off
Fan Speed

Data Dashboard for LabVIEW



- You can also use the "Data Dashboard for LabVIEW App" on iPad or Android devices in order to Monitor the Data you are Logging.
- https://www.ni.com/mobile/

AvailableWeb Service Methods

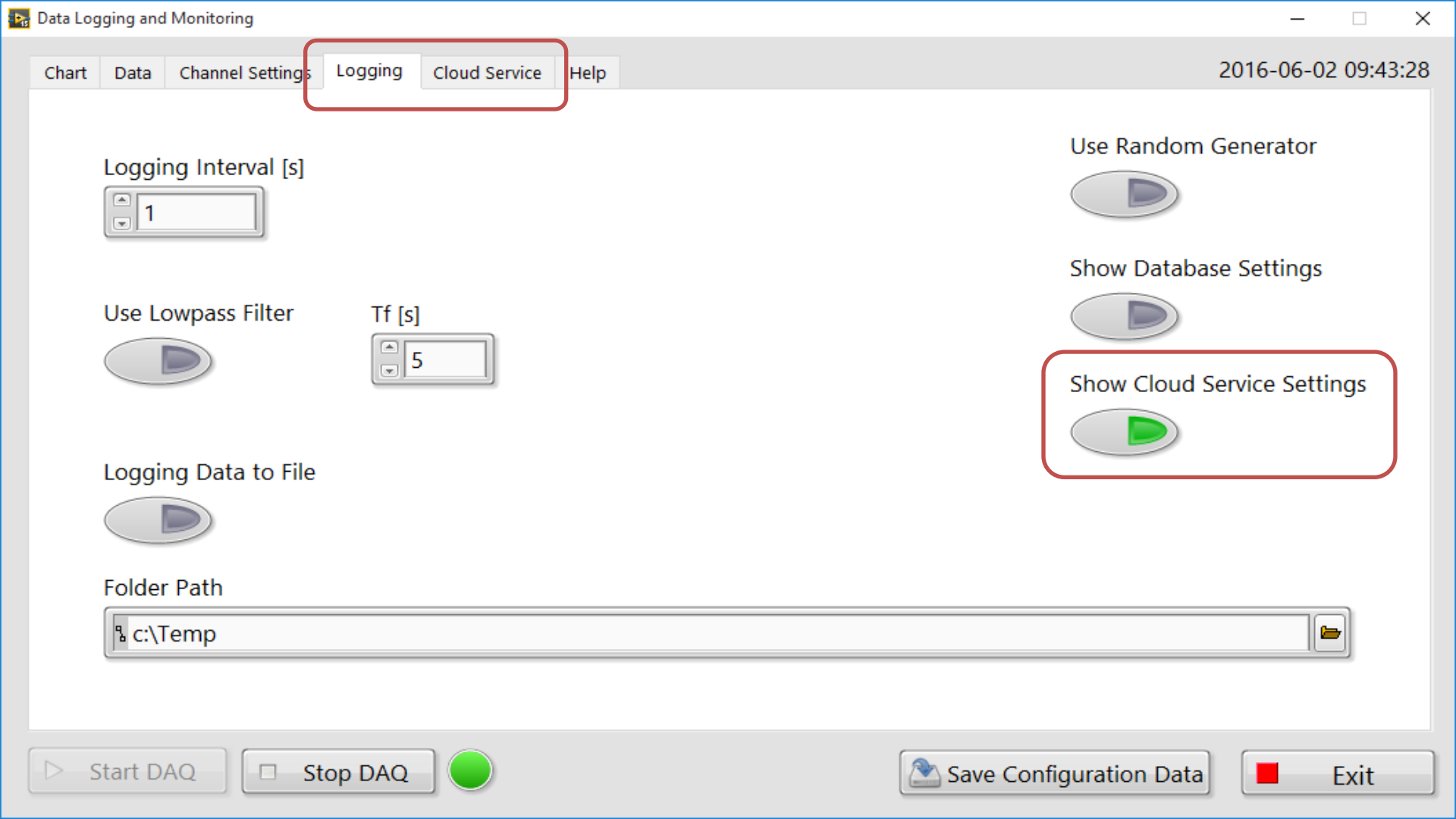
- GetChannel?Channel={value}
  - Gets the Current Value for the spesific Channel
- GetData
  - Get the Current Values for All Channels

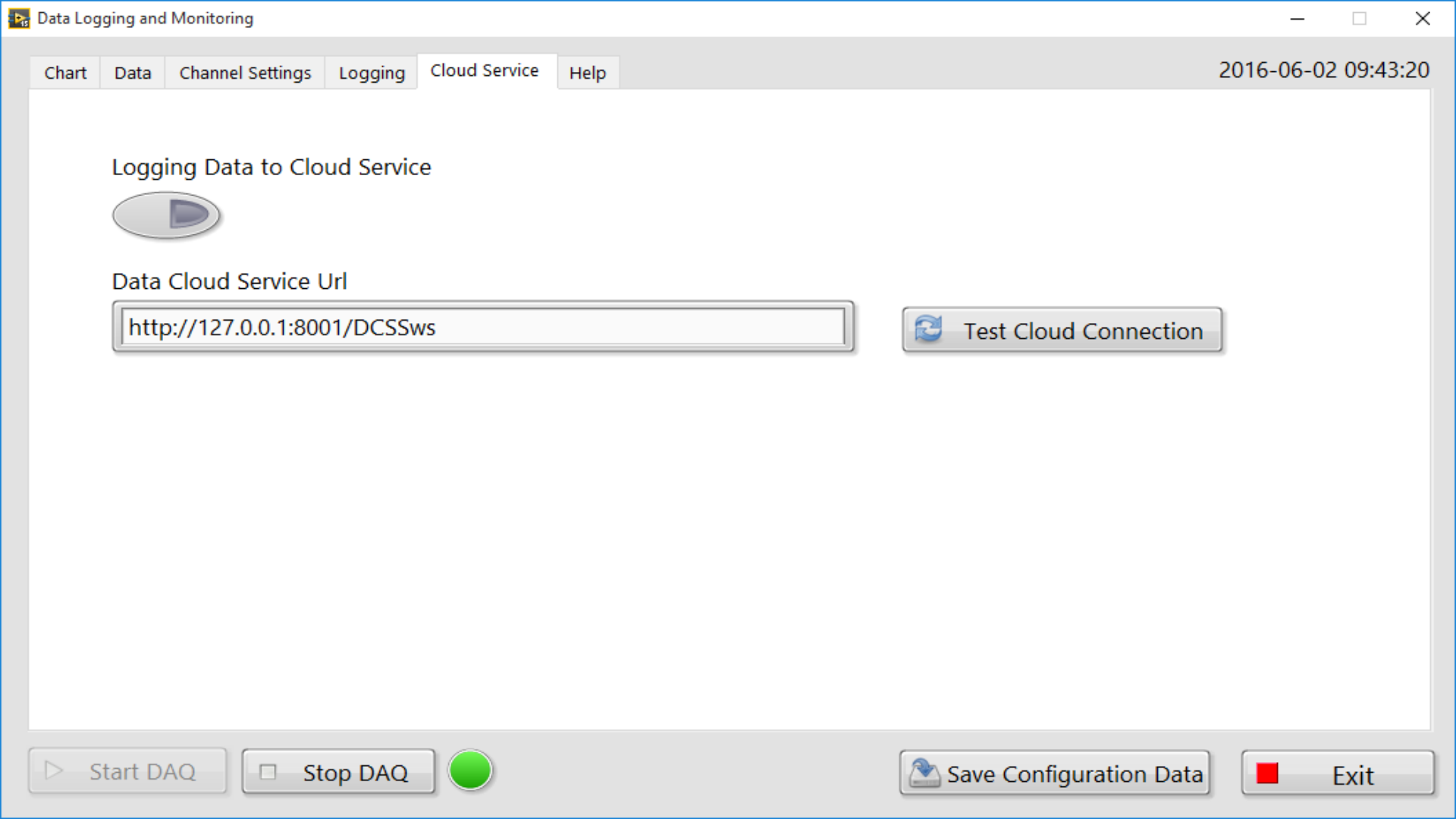
Data Cloud Service

Hans-Petter Halvorsen, M.Sc.

Data Cloud Service

- In addition to Log Data to a File or a Database, you can also Log Data to a remote “Data Cloud Service”.
- You can download the “Data Cloud Service” from my Web Site.
- Then you can install it on a computer/server in your Local Network or in the Cloud


Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Cloud Service
Help
2016-06-02 09:43:28
Logging Interval [s]
1
Use Random Generator
Show Database Settings
Use Lowpass Filter
Tf [s]
5
Show Cloud Service Settings
Logging Data to File
Folder Path
c:\Temp
Start DAQ
Stop DAQ
Save Configuration Data
Exit


Data Logging and Monitoring
Chart
Data
Channel Settings
Logging
Cloud Service
Help
2016-06-02 09:43:20
Logging Data to Cloud Service
Data Cloud Service Url
http://127.0.0.1:8001/DCSSws
Test Cloud Connection
Start DAQ
Stop DAQ
Save Configuration Data
Exit

Hans-Petter Halvorsen, M.Sc.

University College of Southeast Norway

www.usn.no

E-mail: hans.p.halvorsen@hit.no

Blog: http://home.hit.no/~hansha/