DATEXEL LLC

Data Logging Registers from Current Transformers.

This application reads the Current reading in several Current Transformer Model QEED QI-50-V-485 with a DAT9011DL USB and then stores the reading to a USB Thumb Drive.

Start-up.

1. The Modbus Slave Current Transformers are set up to Baud Rate 38400, Parity None and 1 Stop bit.
2. The CT's are set to address 1, 2 and 3. The DAT9011DL USB Modbus Master is set to address 10.
3. Connect to the DAT9011DL with the Ethernet Port. This method is shown on Ethernet Connection Application Note found on the Datexel download page.
4. This application note starts where you have set the DAT9011DL as the Controller and Clicked the Yellow Box with R in it and read the default Registers.
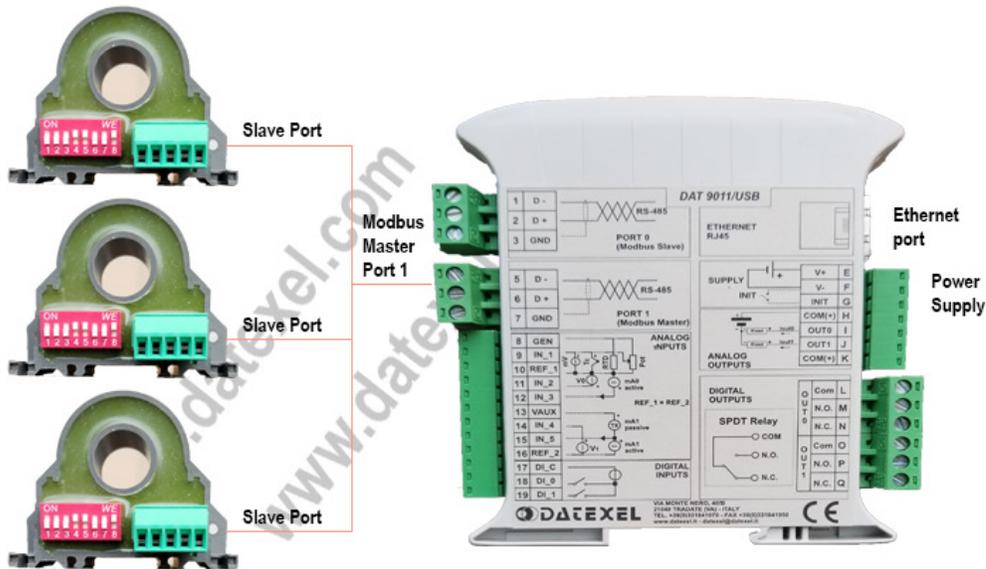
Wiring connections for Modbus Current Transformers and the Data logger.

1. Wire the CT's to the Master port on the DAT9011DL.
2. Connect 24 Vdc power supply to the CT's and the Data Logger.
3. Run the Dev9K software from Datexel download page.

Only after communicating with the DAT9011DL can you configure the Modbus Master port to communicate with the Current Transformers.

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Configure the Modbus Master Port.

The devices will not communicate to each other unless they have the same Baud rate, Parity, and Stop bit.

1. Click on Tools.
2. From the drop down menu click Config.
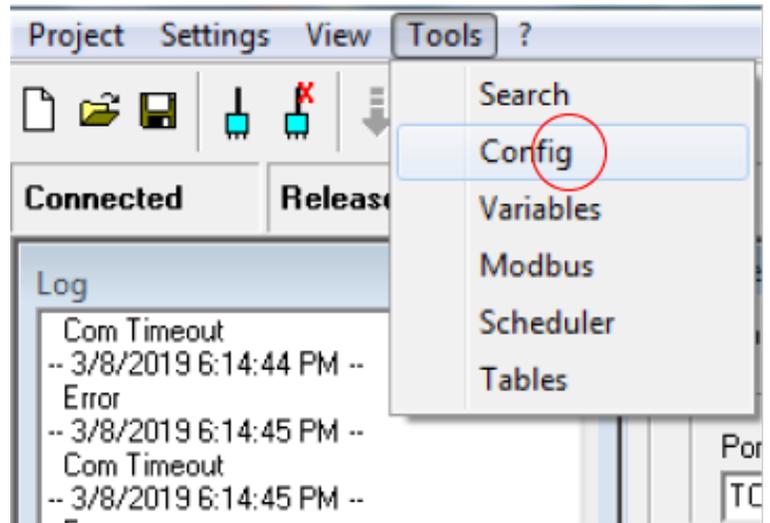
Setting up Modbus Master Buad Rate.

1. Click on Comm.
2. The Baud Rate on Port 1 (RS485 Master) must be the same as the CT's 38400. Change the communication settings on the Modbus Master Port 1.
3. Finally click update.
4. It is a good idea to close the box and open again to check that the comm port changes have been uploaded to the DAT9011DL. From the drop down menu click Config.
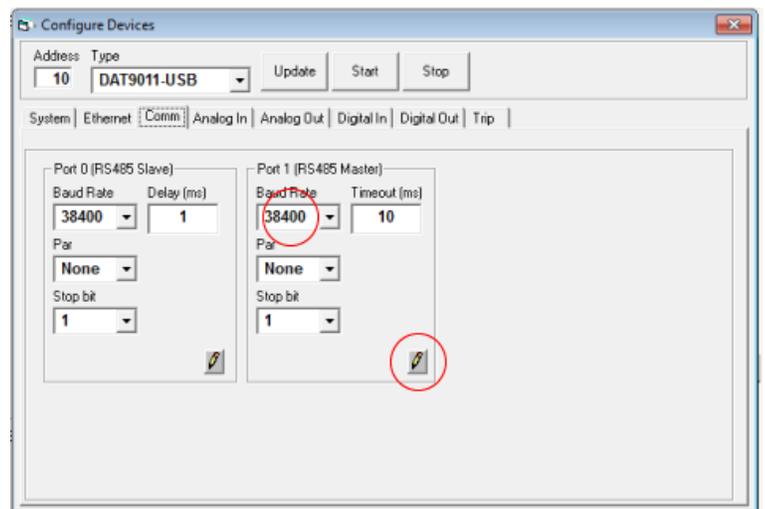
Now you are ready to write the Data logger program.

1. Click the Project label at the top.
2. Click New in the Drop down menu.
3. The Program outline should open.
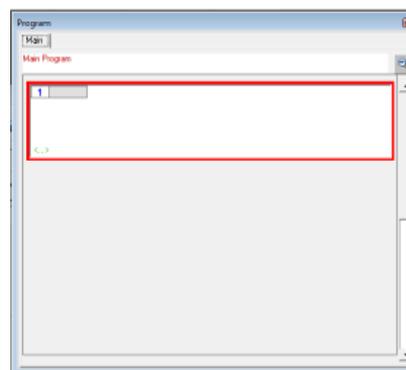
Insert Function Blocks.

The program is made up with a group of function blocks. More information on these function blocks are available in the DAT9xxx user guide.
Importantly the first function block must be labeled start and the last function block must be a goto function block with the command return to start.
You can insert a function block anywhere in the program with the Insert Before or Insert After label.
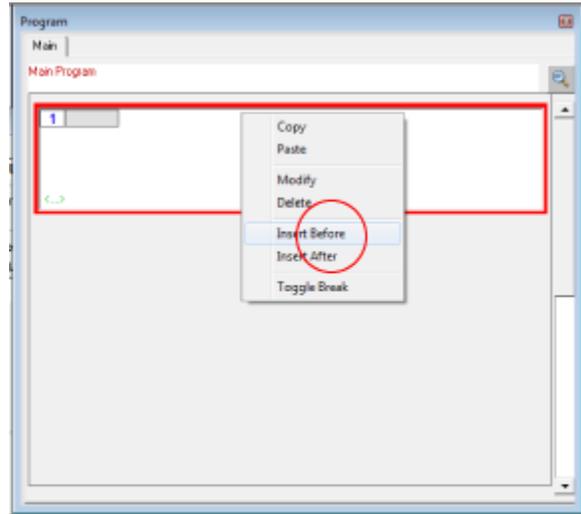
Reading the Current reading from the CT's.

It is advisable to set up the data logger in steps. This step is to read the Current (Amps) input from a single CT and store it in Register 35 in the DAT9011DL.

1. Right click on Function Block 1.
2. On the drop down menu click Modify.
3. Click Comm and select Read Holding.
4. Write start in the Label. (Important).
5. The Address of the CT is 1
6. The Register where the Amp reading is stored is Register 49.
7. We are only reading 1 register from the Current Transformer so enter 1.
8. The Destination for this Current (Amp) reading is register 35.
9. Click OK.
10. It is best now to run this part of the project to make sure you are communicating with the Current Transformer and storing the regiter in destination register 35.
11. Insert another function block called "Flow", Click "Goto". In the Block box right start. Make sure it is the same case and spelling as the Label in the first function block.
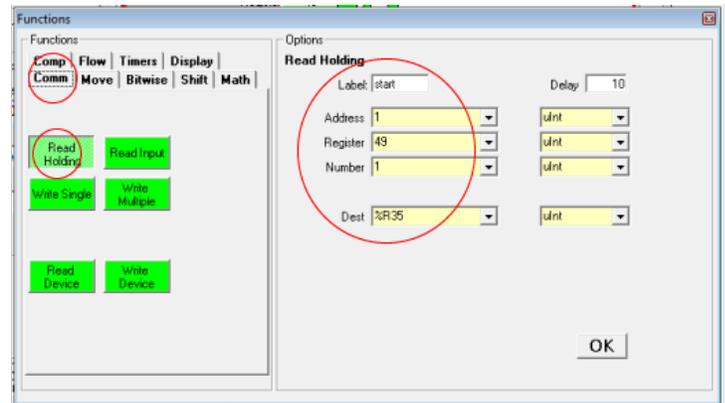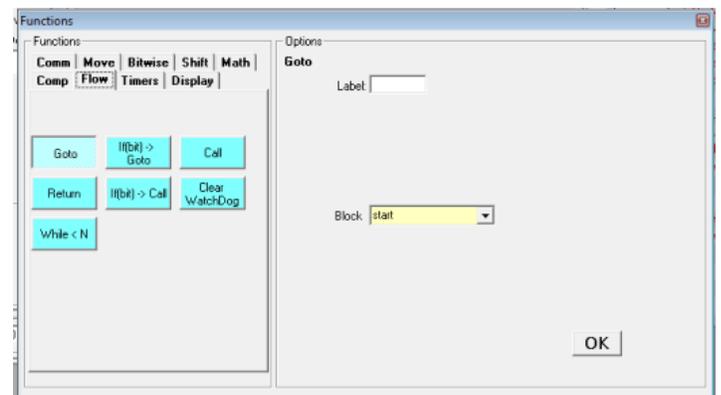
Saving the Project.

The project should now have 2 Function Blocks and should be stored to the PC.

1. Click "Project" on the drop down menu Click "Save as" and save as reading1ct.
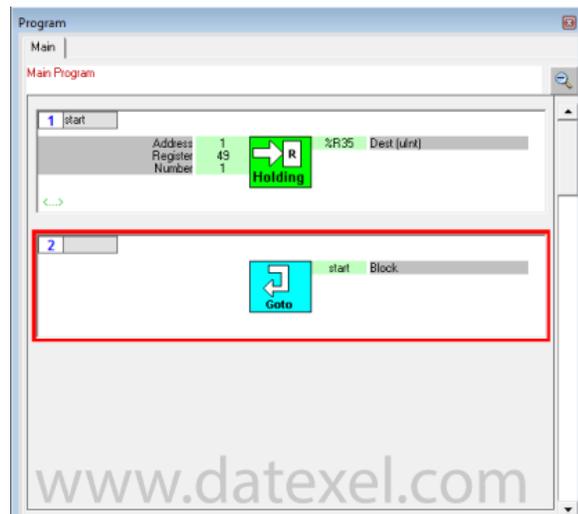
Downloading the project from the PC to the DAT9011DL.

1. Reconnect to the DAT9011DL and set the DAT9011DL to be the controller.
2. Click the Debug button.
3. Click the Download button, in the download drop down menu click OK.
4. The software will now download from the PC to the DAT9011. The yellow LED on the front of the DAT-90011DL will now flash slowly.
5. Wait until the download has finished.
6. It is very important now to click the Release mode and both the TX2 and RX2 LED's will flash quickly.
7. Now the program is stored in the DAT9011DL.
8. Click the yellow R register button on the register table and check that the reading is in Register 35.
9. If you have connection and have a reading in 35 then copy function block 1 twice and change the Address to 2 and 3. Make sure you remove the start label in function block 2 and 3 otherwise the loop will be only to function block 3.
10. Save the project and download and release and you should have readings in 35, 36, and 37.
11. You may have to reconnect to the DAT9011DL and set as controller again.
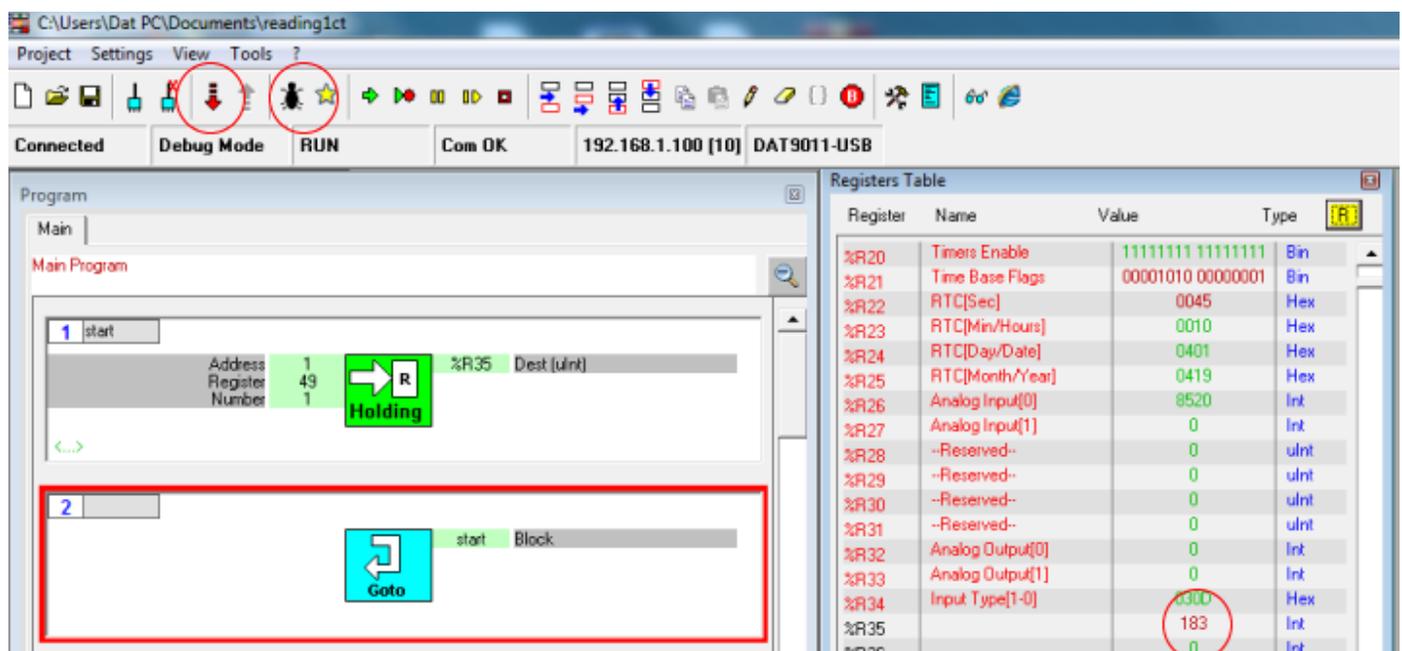
Selecting which Registers to save and format.

The current readings are in register 35, 36 and 37 and stored without decimal places. The 183 seen in the register 35 is actually 1.83 Amps.

1. Click "Tool" and open the "Variables" page.
2. Select the first line enter Date for Label, Click Type and Select Date on the Drop down menu. Type Date in the CSV Header Name.
3. On the second line enter Time for Label, Type and CSV Header.
4. The third line is recording the Current (Amps) on Channel 1. Under Label Enter Amps, Under Type select Int, for Input Reg type 35. The format will be decimal 5 Digits with 2 Decimal points. Under CVS Header Name type Channel 1.
5. Repeat Section 4 in the next 2 lines for the other two channels.
6. Click the pencil to write to the project file.
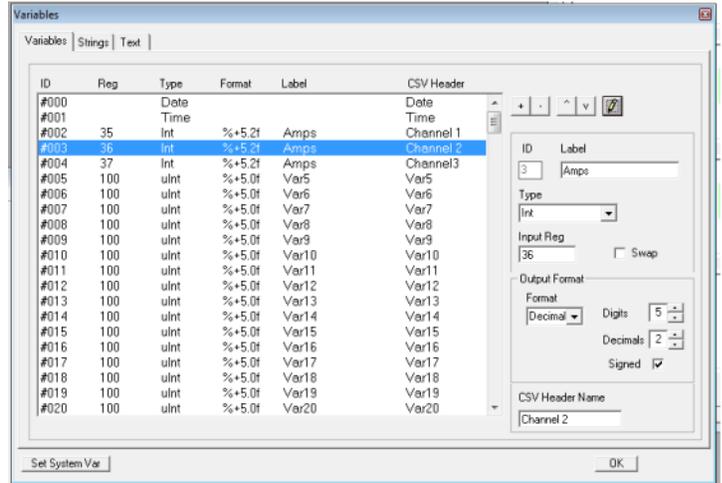
Setting the logging period.

You can choose when to log the stored information. It can be every Minute, Hour or Day. You can also select a trigger from a register to start the logging.

1. Click "Tool" and open the "Scheduler" page.
2. Click on the Item to log and click the + sign to move it over to the right side.
3. Click how often you want to write a new file.
4. Click the time period to record each log (it cannot be less than10 seconds).
5. Click the pencil.
6. Click the save the project file.
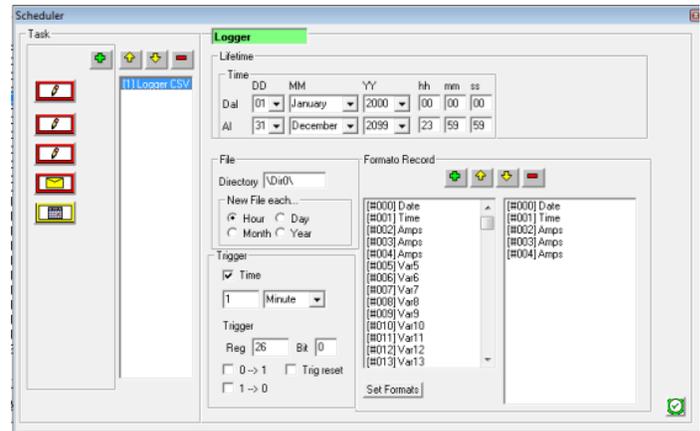
Now run the project. Set the DAT9011DL as the controller, set into Debug mode and download the software to the DAT9011DL. Make sure you Click Release. Insert a USB Thumb Drive wait 10 minutes remove the Thumb Drive and check you have a CSV file.

Explanation of the Project.

- Logging Current (Amps) from 3 Modbus Slave Current Transformers.
- All devices must have the same communication parameters.
- Connect the PC to The DAT9011DL Modbus Master Data Logger.
- Design a Program with Function Blocks to read the Amps stored in the Modbus Current Transformers and save the same readings in the Registers in the DAT9011DL.
- Set in the DAT9011DL what to store.
- Set in the DAT9011DL when to store.
- Insert a Thumb Drive into the DAT9011DL to obtain the data that has been logged.