

Model 201/EMF16 Sample Source Code for BBC Basic

Rev D January 2017

Samp201.bas is sample code demonstrating the use and programability of the Model 201 Precision Data Acquisition System. Samp201 uses the Driver201.CFG configuration file for set up. Samp201.bas does not provide for changing the configuration. The functional blocks generally follow the original QBasic code, Drivr201.bas, which writes the configuration files. Drivr201.bas is not compatible with Win 7 and higher, so we have modified NT_m201.exe to write both its native configuration file, 201ewin.cfg, and a compatible Drivr201.CFG file. NT_m201 continues to read from only the 201ewin.cfg file for its settings.

NOTE: The use of keywords in BBC basic required altering many of the variable names, but they should be recognizable.

You will need either the demo or full version of BBC basic installed in order to run this sample code. Turn off lower case keywords.

Run Driver201.EXE or NT_m201.exe in a DOS shell and save the configuration at exit. Close the application and put the Drivr201.CFG file in the folder with Samp201.bas before you run it. Use a maximum BAUD rate of 4800 for Windows.

NOTE: Driver201 is written for QB4.5, which only supports 2 COM ports. You may need to reassign your USB-to-Serial converter port to COM1 or 2 in order to run. Driver201. NT_m201.exe supports COM1 through COM4. You can edit the Drivr201.CFG file by changing only the COM number for operation under BBC Basic at higher COM port numbers.

Samp201 does not attempt a friendly user interface. It focuses on demonstrating the underlying functions.

First, the various programmable settings are loaded from the .CFG file and are displayed. Then, the user is prompted for Polled or Scanning mode. If you select Polled, only Polled mode will be available. Select Scanning, and both modes are available.

If echo test is selected, it will exit to polled or scanning, depending on the terminating keystroke.

If Polled, the Polled channel, which is read from the .CFG file, is sampled repeatedly. "C" allows the user to enter a new channel selection code in the compressed format of CHANNEL% * 16 + EXTERNAL%, where CHANNEL%

is 0 to 7, and the external code is 0 to 15. The Digital input and oUtpu commands are invoked with "D" or "U". The microcode Version is read if "V" is pressed. "K" invokes a checksum test, or E will exit. If local averaging is used, both the most recent data and the averaged data are displayed.

If scanning is selected at the first prompt, the scanning set-up information will be transmitted to the data system and a scan will begin, with the results printed on the screen. If many channels are scanned, the presentation will wrap. Esc will quit. Enter " E" to end the current scan, perform a checksum test, and then prompt to restart the scan or return to Polling.

Calibration scans have the offset channel applied to all the other data points in each scan.

The nt_m201 code handles averaging slightly differently from the Drivr201 code. Samp201.bas, as of January 2017, supports the nt_m201 usage. AVERAGE% is renamed LOCAVERAGE% for clarity. NUMAVG% is used for remote averaging only, and LOCAVERAGE% is local averaging for polled mode only. Local averaging can be any integer value.

There is almost no error handling. Typically, an error message will be printed, and execution will stop. A variable called db% can be set to 1 at the top of the code to print debugging information during operation.

Supported features:

- 16 and 24 bit conversion
- unipolar and bipolar operation
- internal Gain
- remote averaging
- local averaging
- filter
- single channel, normal, and calibration scanning
- echo test
- channel selection
- version
- digital input and output

Bug reports are invited.