Appendix I

**PIC Program Flow**

From reset
↓
Setup everything, LED=green
↓
Wait for QL high
↓
Wait for C4 strobe
↓
Read sampling rate from D0
↓
Throw relay, enable chips, load timer, set LED=red
↓
Sample 8192 points (see **sampling flow**)
↓
Disable ADC, setup RAM for output, set LED=blinking green
↓
Send data w/handshake (see **data output flow**)
↓
RESET

**Sampling Flow**

Set R/C_bar high, OE_bar high, CE_bar low, BYTE high, WE_bar high, Addr=0x00
↓
Wait for BUSY_bar high
↓
Drop R/C_bar, start timer
↓
Raise R/C_bar after ~200 ns
↓
(1st conversion) Wait for BUSY_bar high
↓
Drop WE_bar
↓
Raise WE_bar after ~500 ns
↓
Do nothing (wait for timer interrupt) until DONE_Flag=1

High-priority timer interrupt
Restart timer
↓
Drop R/C\_bar
↓
Drop BYTE
↓
Raise R/C\_bar after 100+ ns
↓
Increment Addr
↓
Drop WE\_bar
↓
Raise WE\_bar after ~500 ns
↓
Raise BYTE
↓
Increment Addr
↓
If Addr=0x0 set DONE\_FLAG and retfie FAST
↓
Wait for BUSY\_bar high
↓
Drop WE\_bar
↓
Raise WE\_bar after ~500 ns
↓
Exit interrupt

**Data Output Flow**

Drop R/C\_bar (ADC bus=High Z)
↓
Set WE\_bar high
↓
Wait for QT high
↓
Raise DAV
↓
Addr=0x0
↓
Drop OE\_bar
↓
**Start:** Wait for NFRD high
↓
Drop DAV, toggle red LED
Wait for NDAC high
Raise DAV
Raise OE_bar
Increment Addr
If Addr=0x0, exit and RESET
Drop OE_bar
Go back to Start

PIC Flowchart