How are the data stored in *.ncs-files

File Header

16 kilobyte ASCII text header

Information regarding settings (sampling rate, recording, start, input range,....)

File Data

Each data packet contains:

UInt32: unsigned 32-bit integer, 4 bytes
UInt64: unsigned 32-bit integer, 8 bytes
Int16: signed 16-bit integer, 2 bytes (-32768 to 32767)

Continuously Sampled Record

Storage format for continuously sampled channel (CSC) recorded data. These files end in the NCS extension.

UInt64	qwTimeStamp	Cheetah timestamp for this record. This corresponds to the sample time for the first data point in the snSamples array. This value is in microseconds.
UInt32	dwChannelNumber	The channel number for this record. This is NOT the A/D channel number.
UInt32	dwSampleFreq	The sampling frequency (Hz) for the data stored in the snSamples Field in this record.
UInt32	dwNumValidSamples	Number of values in snSamples containing valid data.
Int16[ ]	snSamples	Data points for this record. Cheetah currently supports 512 data points per record. At this time, the snSamples array is a [512] array.

header

data

Header of a *.ncs-file

```
header=textread(filename,'%s',43)

header =
  43×1 cell array                      {'(h:m:s.ms)'              }    {'-CheetahRev'                  }
    {'########'            }           {'13:22:23.211'            }    {'5.6.0'             }
    {'Neuralynx'           }           {'##'                      }    {'-HardwareSubSystemName'        }
    {'Data'                }           {'Time'                    }    {'AcqSystem1'        }
    {'File'                }           {'Closed'                  }    {'-HardwareSubSystemType'        }
    {'Header'              }           {'(m/d/y):'                }    {'DigitalLynxSX'     }
    {'##'                  }           {'11/16/2011'              }    {'-SamplingFrequency'           }
    {'File'               }            {'(h:m:s.ms)'              }    {'32000'     }
    {'Name'                }           {'13:53:41.240'            }    {'-ADMaxValue'       }
    {'F:\2011-11-16_13-22-23\LA_Ref.ncs'}  {'-FileType'          }    {'32767'             }
    {'##'                  }           {'CSC'                     }    {'-ADBitVolts'       }
    {'Time'                }           {'-FileVersion'            }    {'0.000000030518510385491027'   }
    {'Opened'              }           {'3.3.0'                   }    {'-AcqEntName'       }
    {'(m/d/y):'            }           {'-RecordSize'             }    {'LA_Ref'          }
    {'11/16/2011'          }           {'1044'                    }    ….
```