Articulograph AG100 - Data file structure

A. Results of your measurements with the Art.exe program

Every study creates 3 files with organisational data and additional 3 files for each sweep. The sweep number is coded in the file extension. The first character of the file extension defines the type of the data (0= co-ordinates; T= tilt factor; A= acoustic) and the last two characters represent the sweep number.

If you name a study for instance "TEST" you get the following files:

1. Files with organisational data

The following files are only once created for one study.

a) TEST.PRT

The protocol file "TEST.PRT" is a normal text file and contains the system parameters you have adjusted, the protocol data and the commentary to the individual sweeps. You can type, print or edit this file.

b) TEST.CFG

This file contains the adjusted system parameters and calibration information in binary format. This and the following file is used by the evaluation programs. For special analysis you need programmer information. The Type declaration is shown in the chapter "Detailed programming information".

c) TEST.TIM

The timing file contains one data record for each sweep. The record is named Tim_TYPE. It contains the sweep number, the count of measurement points and the starting time in hour, minute, second and hundredth of seconds. The Type declaration is shown in the chapter "Detailed programming information".

2. Files for each sweep

The following three types of data files are created for each sweep in a study. The last two characters of the filename extension represent the sweep number.

a) TEST.001 .. TEST.099

The movement data of the first sweep are stored in "TEST.001". The XY-co-ordinates are in units of 0.01 mm as integer values.

b) TEST.T01 .. TEST.T99

For every XY-co-ordinate stored in TEST.001 there is a tilt factor stored in the file TEST.T01.

c) TEST.A01 .. TEST.A99

Each sweep's acoustic speech information is stored in these files in a compressed format.

3. Additional files when more than 5 channels are used

a) TEST.101 .. TEST.199

The movement data of the channels 6 - 10 are stored in "TEST.101" in the same manner as the data of channel 1 - 5 are stored in TEST.001".

b) TEST.U01 .. TEST.U99

For every XY-co-ordinate stored in TEST.001 there is a tilt factor stored in the file TEST.U01.

4. Additional files when more than 10 channels are used

a) TEST.201 .. TEST.299

The movement data of the first sweep are stored in "TEST.201". The XY-co-ordinates are in units of 0.01 mm as integer values.

b) TEST.V01 .. TEST.V99

For every XY-co-ordinate stored in TEST.001 there is a tilt factor stored in the file TEST.V01.

B. The data files created by MultiCV

The MultiCV program leaves all measured data unchanged. It creates new files in different formats.

1. Script files to create AutoCad drawings

a) TEST01.SCR .. TEST99.SCR

TEST01.SCR is a control file for the AutoCad program and will produce an AutoCad drawing file that contains the movement curves of the first sweep.

2. ASCII Files for general data base and evaluation programs

a) TEST.D01 .. TEST.D99

The file TEST.D01 contains nearly the same information as the TEST.001 file but in an ASCII data format for processing with data base software.

The movement data are converted to an ASCII file which represents a table. Each row shows all data of one sample. You can edit, type or print this file:

```
 tim, Ch1-X, Ch1-Y, Ch1-T, Ch2-X, Ch2-Y, Ch2-T, Ch3-X, Ch3-Y, Ch3-T, Ch4-X, Ch4-Y, Ch4-T, Ch5-X, Ch5-Y, Ch5-T
   0,  4175, 15627,    94,  5005, 16161,    94,  5861, 16898,    97,  3493, 14168,    98,  2696, 15628,    99
 100,  4208, 15622,    94,  5013, 16155,    94,  5856, 16891,    97,  3516, 14161,    98,  2727, 15624,   100
 200,  4226, 15622,    95,  4995, 16161,    94,  5856, 16891,    97,  3493, 14168,    98,  2731, 15628,    99
 300,  4208, 15622,    94,  5000, 16156,    94,  5865, 16893,    97,  3490, 14165,    98,  2696, 15628,    99
```

The first column contains the time in milliseconds. The following columns contain the x and y coordinate and the tilt factor of each channel.

3. Acoustic PCM data

a) TEST.M01 .. TEST.M99

The file TEST.M01 contains the same information as the file TEST.A01 but in a non-compressed integer data format. The acoustic signal is sampled as a 12 Bit word with 16 000 samples per second. The most significant 4 bits are set to zero.

The file is organized as a binary sequence of 16 Bit words (512 Byte block size) and does not contain any header information. The first 16 Bit word represents the first acoustic sample. The least significant byte is stored first.

C. Detailed Programming Information

1. TEST.CFG

The configuration file contains the following record that keeps the adjusted parameters for the study:

```
conf_TYPE =   RECORD                                    { Konfigurationsfile        }
              ceinstellwerte      : array[1..3] of Byte;       { Sendeleistung   }
              cOffset             : array[1..3, 1..5] of Integer;
              crmin               : array[1..5, 1..3] of double;
              cMessPeriode,                             { Meßfrequenz     }
              ckanalanzahl,                             { Anzahl Meßpositionen   }
              citt_steps,                               { Iterationsschritte      }
              cF_Shift            : Byte;               { Mittelwert aus ..       }
              cPanX,                                    { X und Y Pos. der        }
              cPanY,                                    { graf. Darstellung       }
              cScale              : Integer;            { Vergrößerung    }
              cPotenz_K,                                { R hoch Potenz  }
              cR_cen,                                   { Radius zur Mitte        }
              cR_max,                                   { größter zugelassener    }


              cYS,                                      { Dreieck: Seitenl„nge    }
              cPotenz_S,                                { neu genutzt     }
              cPotenz_N           : double;                 { neu genutzt      }
              cDrv,                                     { Laufwerk für Daten      }
              cDatenDir           : String [20];        { Directory für Daten     }
              cKommentar          : Char;               { Kommentieren J/N        }
              END;
```

2. TEST.TIM

The time file contains one "Tim_TYPE" record for each sweep.

```
Tim_TYPE =    RECORD                                    { Zeitsynchronisationsfile  }
              SampleNr,
              Samples,
              Shour,
              SMin,
              SSek,
              SHSek               : Word;
              END;
```

3. TEST.001 .. TEST.099

The file is organized as a binary sequence of "Fi_MessT" records and does not contain any header information. The record "Fi_MessT" is defined as:

Fi_MessT = array[1..5] of word;

The index [1..5] refers to the channel 1-5. The first record contains the X values for all 5 channels of the first sample. The second record contains the Y values for all 5 channels of the first sample. The third record contains the X values for all 5 channels of the second sample.

All odd records contain the X-values and the even records contain the Y-values.

If the study is done with less than 5 channels, the data format is the same. The values at the places of the unused channels are not valid.

4. TEST.T01 .. TEST.T99

The file is organized as a binary sequence of "Fi_ TiltT" records and does not contain any header information. The record "Fi_ TiltT" is defined as:

Fi_TiltT = array[1..5] of Byte;

For every XY-co-ordinate stored in TEST.001 there is a corresponding tilt factor stored in the file TEST.T01.

5. TEST.A01 .. TEST.A99

The file is organized as a binary sequence of 8 Bit Bytes (128 Byte block size) and does not contain any header information. Each sample is compressed to a 4 Bit value. The first sample is stored in the high nibble of the first byte. The second sample is stored in the low nibble.