CHAPTER 6
ASCII Output

ASCII output is available for the Aquadopp single point current meter and for the Continental current profiler.

Aquadopp ASCII Output

The Aquadopp single point current meter can also output data in ASCII format. To use the ASCII output feature you must upgrade your Aquadopp firmware to version 1.13 or higher. You can download new firmware from the *Support Pages of www.nortek-as.com*.

Note: The ASCII output ability applies to the Aquadopp single point current meter only and not to the Aquadopp profiler.

The output format is based on the current output of the ASCII conversion with our software. All positions are the same, the only differences are that the error and status codes are output as decimal numbers (e.g. 177_{10} instead of 10110001_2), and the field delimiter is always just a single space. The description of the format is found in the .hdr file that is generated when you convert an .aqd data file to ASCII – shown overleaf.

There are two ways to enable the ASCII output:

1. The command **AS** (**A**scii**S**tart) is the ASCII equivalent to the regular **ST** command. It starts a measurement with the current configuration and outputs the data in ASCII format. To get back into command mode you must send the confirmation characters **MC** after sending a break.
2. The command **MA** (**M**easure**A**scii) makes one measurement with the current configuration (unless when configured for continuous measurement – see below)

and outputs the data in ASCII format. There is a new binary equivalent to this command, **AD** (**A**quire**D**ata). If you want to control the data timing from a data logger you should use one of these commands. By using either the **MA** or the **AD** command, the instrument will automatically power down after the measurement is finished. Sending a break will cause the instrument to enter command mode directly, for example, if you want to stop a continuous measurement.

The following should be observed:

- ASCII commands consist of a pair of ASCII characters, sent when the instrument is in **Command** mode. No other characters are required (i.e. checksum or end of line characters).
- Make sure you have configured the instrument correctly before using the ASCII output commands. To use the ASCII commands, you will first configure the instrument from the Aquadopp software by entering the required setup parameters and starting a measurement.
- Note that for the **MA** command to work properly, the current meter cannot be in **Continuous** mode. This means that it must have a measuring interval that is at least 4s longer than its averaging interval.
- When you stop the measurement to enter **Command** mode, the instrument will remember the last configuration, even when power is removed.

The ASCII Format

The output format is the same as the standard output of the ASCII conversion using the Aquadopp software, with the exception that speed and direction are not included. The sequence is the same, but the error and status codes are decimal numbers instead of binary (i.e. 177_{10} instead of 10110001_2) Also, the field delimiter is always just a single space. The description of the format is found in the .hdr file that is generated when you convert an .aqd data file to ASCII. Here is an example with three lines of data (sampled at 10 minutes intervals):

Month	Day	Year	Hour	Minute	Second	Error code	Status code	Velocity (Beam1/X/East)	Velocity (Beam2/Y/North)	Velocity (Beam3/Z/Up)	Amplitude (Beam1)	Amplitude (Beam2)	Amplitude (Beam3)	Battery voltage	Soundspeed	Heading	Pitch	Roll	Pressure	Temperature	Analogue input 1	Analogue input 2
4	1	2004	11	3	40	0	172	-0.104	-0.226	0.061	21	20	20	13.3	1525.5	350.5	52.9	-53.9	1.552	22.48	6304	6287
4	1	2004	11	3	44	0	172	-0.375	-0.366	-0.082	21	20	20	13.3	1525.5	350.5	52.9	-53.9	1.560	22.48	6280	6270
4	1	2004	11	3	48	0	172	-0.705	-0.526	-0.359	21	20	20	13.3	1525.5	350.3	52.9	-53.9	1.550	22.48	6204	6205

Calculating the Speed

The speed is not included in the output file, but can be calculated from the following:

$$\text{Speed} = \sqrt{V_{EAST}^2 + V_{NORTH}^2}$$

In Excel® or MATLAB® this yields:

```
speed = SQRT(Veast*Veast+Vnorth*Vnorth)
```

Calculating the Direction

The direction is not included in the output file either, but can be calculated from the following:

Excel®: `direction=MOD(90-ATAN2(Veast;Vnorth)*180/PI,360)`

MATLAB®: `direction=mod(90-atan2(Vnorth, Veast)*180/pi,360)`

Continental ASCII Output

The Continental is also capable of sending out ASCII formatted data.

To start a measurement with output in ASCII format the following steps must be used:

1. Set the relevant deployment parameters using the Continental software that is shipped with the instrument.
2. Download the deployment configuration to the instrument by starting a measurement.
3. Stop the measurement, the instrument has now stored the configuration internally.
4. Start an ASCII measurement from the terminal emulator using the two character command **AS** (**A**scii **S**tart)
5. Stop the measurement using **Stop Data Collection** in the Continental SW. Alternatively, the measurement can be stopped by sending a soft break followed by the characters **MC** (**M**ode **C**ommand).

Observe that there is no storage of data to the internal recorder when data are output in ASCII format.

The format is as follows (overleaf):