Series III and S4 Computer Data Format

This document outlines the format of data sent down the RS232 serial link from the WaterRower Series III computer. The data transmitted recreates the displayed parameters on a remote computer. It also provides additional information, which defines the shape of the power stroke.

Basic Protocol

Baud Rate: 1200

Number of Data Bits: 8

Number of Stop Bits: 1

Parity Check: None

Flow Control: None

Distance Message

Once every second during the workout a two byte message is sent containing the following information

Byte 0 Identification Number = FEh

Byte 1 Distance covered in last second in 0.1m units (as used by the distance display)

Note that this information will be sent at the next free sample slot and consequently transmission may be delayed by up to 125ms

Stroke Rate/Speed Message

At the start of every stroke (excluding the first stroke or a stroke >= 16 secs) during a workout a three byte message is sent containing the following information

Byte 0 Identification Number = FFh

Byte 1 Current no of Strokes per minute (equal to the displayed stroke rate)

Byte 2 Current Speed in 0.1m/s units (equal to the displayed speed)

Motor Voltage Message- Series III only

During the power stroke (i.e. when motor voltage ADC output >=16), the ADC output of the sampled motor voltage is sent in pairs by use of three byte messages containing the following information

Byte 0 Identification Number = FDh

Byte 1 ADC output of previous motor voltage sample

Byte 2 ADC output of the current motor sample

Consequently, the first message is sent in the sample after the beginning of the power stroke (i.e. 62.5 ms after the stroke rate/speed message) and then at every other sample (i.e. every 125ms) until the end of the power stroke. If the power stroke contains an odd number of samples then byte 2 of the last message will be set to 0.

End of Power Stroke Message

At the end of the power stroke (i.e. when the motor voltage ADC output falls back below the threshold level of 16), a one byte message is sent containing the following information.

Byte 0 Identification Number = FCh

If the power stoke contained an odd number of samples, then transmission will be delayed by one sample (i.e. 62.5ms).

Heart Rate Message

Whenever a Heart Rate value is received from the polar rate monitor, the following two byte message is sent.

Byte 0 Identification Number = FBh

Byte 1 Heart Rate Value (40-240)

Series II Data Format

This document outlines the format of data sent down the RS232 serial link from the WaterRower Series II computer. The data transmitted recreates the displayed parameters on a remote computer. It also provides additional information, which defines the shape of the power stroke.

Basic Protocol

Baud Rate: 1200

Number of Data Bits: 8

Number of Stop Bits: 1

Parity Check: None

Flow Control: None

Distance Message

Once every second during the workout a two byte message is sent containing the following information

Byte 0 Identification Number = FEh

Byte 1 Distance covered in last second in 0.1m units (as used by the distance display)

Note that this information will be sent at the next free sample slot and consequently transmission may be delayed by up to 125ms

Stroke Rate/Speed Message

At the start of every stroke (excluding the first stroke or a stroke >= 16 secs) during a workout a three byte message is sent containing the following information

Byte 0 Identification Number = FFh

Byte 1 Current no of Strokes per minute (equal to the displayed stroke rate)

Byte 2 Current Speed in 0.1m/s units (equal to the displayed speed)

Motor Voltage Message

During the power stroke (i.e. when motor voltage ADC output >=16), the ADC output of the sampled motor voltage is sent in pairs by use of three byte messages containing the following information

Byte 0 Identification Number = FDh

Byte 1 ADC output of previous motor voltage sample

Byte 2 ADC output of the current motor sample

Consequently, the first message is sent in the sample after the beginning of the power stroke (i.e. 62.5 ms after the stroke rate/speed message) and then at every other sample (i.e. every 125ms) until the end of the power stroke. If the power stroke contains an odd number of samples then byte 2 of the last message will be set to 0.

End of Power Stroke Message

At the end of the power stroke (i.e. when the motor voltage ADC output falls back below the threshold level of 16), a one byte message is sent containing the following information.

Byte 0 Identification Number = FCh

If the power stoke contained an odd number of samples, then transmission will be delayed by one sample (i.e. 62.5ms).