SWISS TIMING

SAILING

SAILMASTER

Data Interface

Protocol Description

xxxx.xxx.02

Version 1.0

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Caution and safety precautions

- Never use any other charger than the supplied or a type approved by Swiss Timing. This could destroy the battery, cause damage to unit, and possible cause personal injury due to fire or/and electrical shock.
- Never bypass a power cord ground lead by breaking off the ground pin, or by using inappropriate extension cords or adapters.
- Never plug a power cord into the AC power source until you have made sure that all installation, cabling and power levels, are proper, and that the applicable procedures in this manual have been followed.
- Protect the equipment against splashing, rain and excessive sun rays.
- Never use the device if it is damaged or insecure.
- Verify the selection of the power distribution.
- Verify that the voltage quoted on the rating plate is the same as your voltage. Connect the appliance only to power sockets with protective earth. The use of incorrect connection voids warranty.
- This program may be modified at any time without prior notification.
- Do not open the case; there is nothing that needs servicing inside it. Nevertheless, if the case must be opened, you must call for some qualified personnel. The power supply cable must be disconnected before opening the case.
- During the transport of all Swiss Timing equipment delivered with a reusable carry case, the said case should be used at all times. This is imperative to limit the damage, such as shocks or vibration that can be caused to the units during transport.
- The same cases should also be used when returning equipment to Swiss Timing for repair. Swiss Timing reserves the right to refuse all guarantees if this condition is not fulfilled.
- If the installation includes a horn, be sure to maintain a sufficient security distance from the public.

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Environment

This symbol indicates that this product should not be disposed with household waste. It has to be returned to a local authorized collection system. By following this procedure you will contribute to the protection of the environment and human health. The recycling of the materials will help to conserve natural resources.

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1 INTRODUCTION

About This Document

This document is intended to serve as a protocol description for the data interface of the Sailmaster software application.

2 GENERAL

```
<STX>COMMAND|DATA_1|DATA_2|...DATA_n<ETX>
```

STX	1 byte	02 Hex
ETX	1 byte	03 Hex

All protocols framed between <STX> und <ETX>.
Requests always have a "?" after the command.
Data between "[" and "]" is repeatable (0-n).

Parameter Legend

- RaceId -> the unique id of the race
- DataCount -> number of following Data
- RaceDescription -> Description of the race
- SailNumber   -> the unique boat id
- MarkIndex -> the zero based index of the measurement point (0 is the start)
- MarkType -> the type of the mark (0 – manual, 1 – line crossing, 2 – buoy rounding)
- NOC -> National Olympic Committee Code
- Name -> the name of the Sailor/Boat/Team
- StartTime -> the local start time HH:MM:SS
- MarkTime -> the local day time of the mark rounding HH:MM:SS
- Rank -> the current rank of the boat in the race
- TimeSinceStart -> the time since start HH:MM:SS
- Conditions -> weather conditions
- Temperature -> temperature in degree Celsius
- Humidity -> humidity in %
- WindDirection -> wind direction in degree
- WindSpeed -> wind speed in knots
- Version -> The version number of the SailMaster

Standard error message for non-valid requests: "Invalid command".
If the command is correct but the parameters are invalid: "Invalid parameter".
If a request is answered the Command in the answer is followed by a "!". If this message is sent unrequested, there is no "!" used.
Example:
Request: <STX>RAC?<ETX>
Answer: <STX>RAC!|DataCount…<ETX>

Sent because changes happened or cyclic:
Answer: <STX>RAC|DataCount…<ETX>

3 EVENT TRIGGERED MESSAGES

Availible Races

Note: Automatically sent if changes happen

```
-> SM
<STX>RAC?<ETX>
<- SM
<STX>RAC!|DataCount[|RaceId;RaceDescription]<ETX>
```

Course Configuration

Note: Automatically sent if changes happen; sort by MarkIndex

```
-> SM
<STX>CCG?|RaceId<ETX>
<- SM
<STX>CCG!|RaceId|DataCount[|MarkIndex;MarkDescription;MarkType;SailNumber1;
SailNumber2]<ETX>
```

Startlist

Note: Automatically sent if changes happen

```
-> SM
<STX>STL?|RaceId<ETX>
<- SM
<STX>STL!|RaceId|DataCount[|SailNumber;NOC;Name]<ETX>
```

StartTime

```
-> SM
<STX>STT?|RaceId <ETX>
<- SM
<STX>STT!|RaceId|StartTime<ETX>
```

Clock at Mark/Finish

Note: Automatically sent if first boat crosses mark

```
-> SM
<STX>CAM?|RaceId <ETX>
<- SM
<STX>CAM!|RaceId|DataCount[|MarkIndex;MarkTime;SailNumber]<ETX>
```

Distance to Mark

```
-> SM
<STX>DTM?|RaceId|MarkIndex|SailNumber<ETX>
<- SM
<STX>DTM!|RaceId|MarkIndex|SailNumber|Distance<ETX>
```

Current Boat Speed

```
-> SM
<STX>CBS?|RaceId|SailNumber<ETX>
<- SM
<STX>CBS!|RaceId|SailNumber|Speed<ETX>
```

Distance between Boats

```
-> SM
<STX>DBB?|RaceID|SailNumber1|SailNumber2<ETX>
<- SM
<STX>DBB!|RaceID|SailNumber1|SailNumber2|Distance <ETX>
```

Average Boat Speed per Leg

```
-> SM
<STX>ABS?|RaceId|Leg|SailNumber<ETX>
<- SM
<STX>ABS!|RaceId|Leg|SailNumber|Speed<ETX>
```

Timing Data

Note: Automatically sent if changes happen

```
-> SM
<STX>TMD?|RaceId|SailNumber<ETX>
SM ->
<STX>TMD!|RaceId|SailNumber|DataCount[|MarkIndex;Rank;TimeSinceStart]
<ETX>
```

Weather Information

```
SM->
<STX>WEA|RaceId|Conditions|Temperature|Humidity<ETX>
```
Example: `<STX>WEA|W4702|Good|22.3|55.6<ETX>`

Wind Data

```
SM->
<STX>WND|RaceId|MarkIndex|WindDirection|WindSpeed<ETX>
```
Example: `<STX>WND|W4702|1|320|5.4<ETX>`

Version

```
->SM
<STX>VER?<ETX>
SM->
<STX>VER!|Version<ETX>
```

4 CYCLIC SENT

Race Position Data (1HZ)

Data is sent every second. You can disable/enable this via:

```
->SM
<STX>RPD?|Switch<ETX>
Switch: 0 – disable, 1 – enable
```

The default value is "enabled".

```
SM ->
<STX>RPD|RaceID|RaceStatus|DataTime|StartTime/EstimatedStartTime|RaceTime|
NextMarkLeader|DistanceToNextMarkLeader|DataCount[|SailNumber;
BoatType;AgeOfData;Latitude;Longitude;SOG;VMG;ALS;COG;NextMark;Rank;
DistToLeader;DistToNextMark;BoatIRM]<ETX>
```

Special Parameter

- RaceStatus -> The state of the race (0 – Ready, 1 – Armed, 2 – Running, 3 – Finished)
- DataTime -> Local time of this snapshot, YYYY-MM-DDTHH:MM:SS+timezone 2011-12-31T12:34:56+01:00
- StartTime/EstimatedStartTime -> Local time, HH:MM:SS
- RaceTime -> Time since start, HH:MM:SS
- NextMarkLeader -> Index of next MeasurementPoint (0 = Start, 1 = First Mark…) for the leading boat.
- DistanceToNextMarkLeader -> the distance to the next mark for the leading Boat in m
- DataCount -> Amount of following Position/Race Information for each competitor and each used official boat/buoy
- BoatType -> (0 – Unidentified, 1 – Competitor, 2 – Committee, 3 – Jury, 4 – TimingScoring, 5 – Buoy)
- AgeOfData -> The age of the data in seconds
- Latitude -> in degree
- Longitude -> in degree
- SOG -> Speed over ground in kn
- ALS -> Average speed over ground per leg in kn
- VMG -> Velocity made good in kn
- COG -> Course over ground in degree
- DistToLeader -> Distance to leader in m
- DistToNextMark -> Distance to next mark in m
- BoatIRM -> The IRM of the boat if given (e.g. DNF, OCS, DNS, BFD…)

5 APPENDIX

5.1 Version history

Version	Date	Modifications since last version
1.0	23/05/12	Initial version, protocol v1.4

NOTES

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