IMSA Enhanced RMon Timing Protocol v1.03

The Enhanced RMon (ERM) will consist of the AMB RMonitor Timing Protocol combined with the messages in this document.

Additional messages may appear in the data steam at anytime and unless they are defined in this document should be ignored. Additional fields may be added to messages in this document and unless defined should be ignored.

Connecting to this data stream is done through a network connection using the TCP protocol similar to a telnet session. The IP address and port number will be discussed in a separate memo/bulletin.

Enhancements to AMB RMonitor Timing Protocol

- The fieldname "Nationality" of the $COMP message will be used during race session and will contain the following car status:
  - "[Blank]" – car is running
  - "Retired"
  - "Excluded"
- The fieldname "Additional data" is not currently used and is reserved for future use.

Miscellaneous Note

- Refreshes of current data will be done every 30 seconds. The refresh will issue the following messages: B, A , $COMP, $C, $E, $H, $G (order is not guaranteed)
- At the discretion of IMSA a $I message may be issued in the data stream to clear the results followed by a refresh.

ERM Message Specification

Every message starts with a $ character (0x24) and ends with CR LF (0x0D (carriage return) 0x0A (line feed)). Inside the message, the fields are separated by a "," symbol (0x2C). The length of a message is not defined. The order of the messages is not defined or guaranteed. The general structure of the message is as follows:

<SOM><Command><Sep> … rest of the message … <EOM>

Item	Data Description	Comments
<SOM>	Start of Message	$ (0x24)
<Command>	Command	L (or any other message in this document)
<Sep>	Separator	, (0x2C)
<EOM>	End of Message	CR LF (0x0D 0x0A)

$L – Line Crossing Message (sent when a car crosses a time line, not repeated)

Field Name	Data Description
Car Number	Characters
Time Line Number	2 Characters
Time Line Name	3 Characters
Date of Time Line Crossing	MM/DD/YYYY
Time of Time Line Crossing	HH:MM:SS.DDD
Driver ID Number	0-6; 0 = Unplugged/No ID; 1-5 = Driver ID
Class Name	Characters

Car Number

If the transponder number is not related to a car number then the "Car Number" field will contain "Tx" followed by the transponder number. Example "Tx339393"

Time Line Number

Time line numbers are numbered sequentially starting with the Start/Finish as number 1 and continue around the track for each time line. After timeline 9 letters are used starting with "A". Time lines on the track will begin with "T" and pit lines will begin with "P". Examples "T1", "P1", "T2" …. "TA", "TB", "PB".

Time Line Name

Time Line Name	Description
SFT	Start/Finish Track
SFP	Start/Finish Pit
POT	Pit Out Track
POP	Pit Out Pit
PIT	Pit In Track
PIP	Pit In Pit

Examples:

$L,"13","P2","POP","01/27/2009","10:10:20.589",1,"PC"

$L,"7","P2","POP","01/27/2009","10:10:21.764",2,"P"

$L,"8","P1","SFP","01/27/2009","10:10:23.494",0,"GT3P"

$T – Track Description Message (repeated)

Field Name	Data Description
Track Name	Characters
Track Short Name	Characters
Track Distance	Characters
Number of Sections to Follow	Number
Data for Each Section	
Section Name	Characters
Section Start (Time Line Number)	Characters
Section End (Time Line Number)	Characters
Section Distance in Inches	Number

Example:

$T,"Circuit of the Americas","COTA","3.40",15,
"S01","T1","T2",3375,"S02","T2","T3",36559,"S03","T3","T4",40933,"S04","T4","T5",13256,"S05","T5","
T6",20923,"S06","T6","T7",1181,"S07","T7","T8",12711,"S08","T8","T9",1181,"S09","T9","TA",29313,"S1
0","TA","TB",41744,"S11","TB","T1",16113,"LAP","T1","P1",217379,"PIT","PB","P2",19688,"SP4","T6","T
7",1181,"SP5","T8","T9",1181

Change History

V1.01

- Added section "Enhancements to AMB RMonitor Timing Protocol"
- Added section "Miscellaneous Note"

V1.02

- POP was listed twice under time line names, changed one to PIP.

V1.03

- Added fields Driver ID and Class Name to $L message.
- Added $T – Track Message.