

# **RMonitor Timing Protocol**

## **Protocol specification**

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Copyright : 1997 – 2001

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### Record Specification

#### Message description:

Every message starts with a \$ character and ends with CR/LF. Inside the message, the fields are separated by a "," symbol 0x2C. The length of a message is not defined and can therefore be more than 256 characters. The order of the records is also not defined. The general structure of the record is as follows:

<SOR><Command><Sep> ...rest of the record ...<EOR>

where:

Item	Description	Comment
<SOR>	Start of record	Default value: \$
<Command>	Command	See below
<Sep>	Separator	',' (Hexadecimal: 0x2C)
<EOR>	End of record	CR/LF (Hexadecimal: 0x0D 0x0A)

Sample:

\$F, ...rest of the record ... CR/LF

#### Ascii representation:

Ascii	Decimal	Hexadecimal
\$	36	0x24
CR	13 (carriage return)	0x0D
LF	10 (line feed)	0x0A
,	44	0x2C

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### Command description:

The message commands can be divided into three levels.

Level	Command	Description
1	F	Heartbeat, flag status, time of day, laps to go, time to go and race time information.
2	A COMP B C E G H I J	Competitor information Competitor information. Run information. Class information. Setting information. Race information. Practice/qualifying information. Init record (clear scoreboard). Passing information.
3	A COMP B C E G H	Competitor information Competitor information. Run information. Class information. Setting information. Race information. Practice/Qualifying information.

### Frequency of the commands:

Level	Description
1	Sent every second.
2	Event driven messages. Sent every result update (only results that have changed are sent).
3	Sent every refresh. The information and layout of the records is the same as the level 2 records.

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### Level description:

#### Level 1

#### \$F – Heartbeat message

Fieldname	Data description	Comments
Laps to go	0 – 99999	Number of laps to go
Time to go	"HH:MM:SS"	Time until the session ends.
Time of day	"HH:MM:SS"	The current time
Race time	"HH:MM:SS"	The time from the first green flag.
Flag status	"Green " "Yellow" "Red " "Finish"	The status field is 6 characters long with trailing spaces.

Frequency: Every second.

Sample: \$F,14,"00:12:45","13:34:23","00:09:47","Green "<CR/LF>

Fieldname	String part	Data
Laps to go	14	14
Time to go	"00:12:45"	12 min 45 sec
Time of day	"13:34:23"	13:34:23
Race time	"00:09:47"	9 min 47 sec
Flag status	"Green "	Green flag

#### Level 2

#### \$A – Competitor information.

Fieldname	Data description	Comments
Registration number	characters	8 characters maximum (this is usually the competitor number).
Number	characters	5 characters maximum.
Transponder number	1 – 2.097.151	
First name	characters	9 characters maximum.
Last name	characters	30 characters maximum.
Nationality	characters	50 characters maximum.
Class number	1 – 99	The unique class number (see \$C record description for details).

Frequency: Each time a competitor is changed (repeated during a refresh).

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Sample:        \$A,"1234BE","12X",52474,"John","Johnson","USA",5<CR/LF>

Fieldname	String part	Data
Registration number	"1234BE"	1234BE
Number	"12X"	12X
Transponder number	52474	52474
First name	"John"	John
Last name	"Johnson"	Johnson
Nationality	"USA"	USA
Class number	5	5

### \$COMP – Competitor information.

Fieldname	Data description	Comments
Registration number	characters	8 characters maximum (this is usually the competitor number).
Number	characters	5 characters maximum.
Class number	1 – 99	The unique class number (see \$C record description for details).
First name	characters	9 characters maximum.
Last name	characters	30 characters maximum.
Nationality	characters	50 characters maximum.
Additional data	characters	50 characters maximum.

Frequency:    Each time a competitor is changed (repeated during a refresh).

Sample:        \$COMP,"1234BE","12X",5,"John","Johnson","USA","CAMEL"<CR/LF>

Fieldname	String part	Data
Registration number	"1234BE"	1234BE
Number	"12X"	12X
Class number	5	5
First name	"John"	John
Last name	"Johnson"	Johnson
Nationality	"USA"	USA
Additional data	"CAMEL"	CAMEL

### \$B – Run information.

Fieldname	Data description	Comments
Unique number	1 – 99	A unique run number.
Description	characters	40 characters maximum.

Frequency:    Each time the run description is changed (repeated during a refresh).

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Sample: \$B,5,"Friday free practice"<CR/LF>

Fieldname	String part	Data
Unique number	5	5
Description	"Friday free practice"	Friday free practice

### \$C – Class information.

Fieldname	Data description	Comments
Unique number	1 – 99	A unique class number.
Description	characters	40 characters maximum.

Frequency: Each time the class description is changed (repeated during a refresh).

Sample: \$C,5,"Formula 300"<CR/LF>

Fieldname	String part	Data
Unique number	5	5
Description	"Formula 3000"	Formula 3000

### \$E – Setting information.

Fieldname	Data description	Comments
Description	Name of the setting	TRACKNAME TRACKLENGTH
Value	characters	40 characters maximum for track name. 8 characters maximum for track length.

Frequency: Each time the track settings are changed (repeated during a refresh).

Sample1: \$E,"TRACKNAME","Indianapolis Motor Speedway"<CR/LF>

Fieldname	String part	Data
Description	TRACKNAME	Name of the track is in the value field.
Value	"Indianapolis Motor Speedway"	Indianapolis Motor Speedway

Sample2: \$E,"TRACKLENGTH","2.500"<CR/LF>

Fieldname	String part	Data
Description	TRACKLENGTH	Length of the track is in the value field.
Value	"2.500"	2.500

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### \$G – Race information.

Fieldname	Data description	Comments
Position	1 – 999	The race position.
Registration number	characters	8 characters maximum.
Laps	0 – 99999	The number of laps.
Total time	“HH:MM:SS.DDD”	Race time.

Frequency: Each time the result is changed (repeated during a refresh).

Sample: \$G,3,"1234BE",14,"01:12:47.872"<CR/LF>

Fieldname	String part	Data
Position	3	3
Registration number	“1234BE”	1234BE
Laps	14	14
Total time	“01:12:47.872”	01:12:47.872

### \$H – Practice/qualifying information.

Fieldname	Data description	Comments
Position	1 – 999	The practice/qualifying position.
Registration number	characters	8 characters maximum.
Best lap	0 – 99999	The lap number of the best lap
Best laptime	“HH:MM:SS.DDD”	The laptime of the best lap.

Frequency: Each time the result is changed (repeated during a refresh).

Sample: \$G,2,"1234BE",3,"00:02:17.872"<CR/LF>

Fieldname	String part	Data
Position	2	2
Registration number	“1234BE”	1234BE
Best lap	3	3
Best laptime	“00:02:17.872”	00:02:17.872

### \$I – Init record.

Fieldname	Data description	Comments
Time of day	“HH:MM:SS.DDD”	The current time.
Date	“dd mmm yy”	The current date.

Frequency: Send when the scorefeed needs to be cleared.

Sample: \$I,"16:36:08.000","12 jan 01"<CR/LF>

Fieldname	String part	Data
Time of day	“16:36:08.000”	16:36:08.000
Date	“12 jan 01”	January 12, 2001



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### \$J – Passing information.

Fieldname	Data description	Comments
Registration number	characters	8 characters maximum.
Laptime	"HH:MM:SS.DDD"	The current laptime.
Total time	"HH:MM:SS.DDD"	The total time.

Frequency: Each time the a competitor crosses the loop ( **NOT** repeated during a refresh).

Sample: \$J,"1234BE","00:02:03.826","01:42:17.672"<CR/LF>

Fieldname	String part	Data
Registration number	"1234BE"	1234BE
Laptime	"00:02:03.826"	00:02:03.826
Total time	"01:42:17.672"	01:42:17.672

## Level 3

### \$A – Competitor information.

See level 2 definition.

### \$COMP – Competitor information.

See level 2 definition.

### \$B – Run information.

See level 2 definition.

### \$C – Class information.

See level 2 definition.

### \$E – Setting information.

See level 2 definition.

### \$G – Race information.

See level 2 definition.

### \$H – Practice/qualifying information.

See level 2 definition.

