

DMSB-Safety-Project “electronic flag signals”

CONDITIONS OF THE CONTRACT FOR THE INTRODUCTION OF ELECTRONIC FLAG SIGNALS IN DMSB-APPROVED AUTOMOBILSPORTS

1 Definition

In the contract as defined hereunder, the following terms must be understood as follows:

1.1 Target

Enhancement of safety - specifically for the drivers and the safety marshals – by increasing the capacity of perceiving flag signals through an electronic real-time transmission of the marshals' flag signals into the driver cockpit under permanent surveillance and control by Race Control.

Effective, comprehensive establishment of an easily transferable technology of the real-time transmission into the driver cockpit and to the Race Control by means of innovative technologies and further developments.

The project is divided into 4 milestones, which are composed as follows:

Milestone 1 is mainly about the development of the system. Furthermore, the acquisition of the electronic flag sets, hardware for the vehicles, light panels, hardware and software for Race Control for the test phase. Performance of a test phase in the course of an event at the Nürburgring Nordschleife (01.06. – 31.12.2019)

Milestone 2 includes the acquisition of the electronic flag sets for **all** marshals at the Nürburgring Nordschleife including Grand Prix Circuit and comprehensive introduction of the electronic flag signals in the VLN series and the ADAC 24h Race as well as the ADAC 24h Qualification Race at the Nürburgring Nordschleife. (01.01. – 31.12.2020)

Milestone 3 comprise the Permanent support/monitoring of the project during the VLN and the ADAC 24h Race as well as the ADAC 24h Qualification Race by means of a continuous monitoring and adjustment, if necessary, of the real-time transmission of flag signals on basis of the findings from milestone 2. Furthermore the Development of measures to establish and integrate other Racetracks. (01.01. – 31.12.2021)

Milestone 4 is about Guidance (meetings, on-site support etc.) on the introduction of the electronic flag signals at other circuits; (such as Nürburgring Grand Prix Circuit, Hockenheim, Sachsenring, Lausitzring, Oschersleben, Norisring and Bilster Berg) an as well the permanent support/monitoring of the project in all circuit races by means of a continuous monitoring and adjustment, if necessary, of the real-time transmission of flag signals on basis of the findings from milestone 3. (01.01. – 31.12.2022)

1.2 Tender Procedure

The DMSB has the sole and exclusive Sporting Power and will oversee the tender procedure.

1.3 Competitors

The competitors shall mean all the competitors taking part in the VLN series and the ADAC 24h Race as well as the ADAC 24h Qualification Race who are required by regulation to compete using only the electronic real-time transmission system defined by the sporting regulations and which is the subject of the present invitation to tender.

1.4 Marshal posts

The marshal posts shall mean all the marshal posts listed in the approved track license. The occupation of the marshal post could be different at the several Events. The number of occupied posts is according to the track license which is mandatory for the Event.

1.5 Manufacturer

The manufacturer shall mean the electronic real-time transmission system manufacturer which tenders into the contract to supply the system for the actions defined in the milestones and does not cover any subcontractor or affiliated company which is not a direct subsidiary.

The contract period is basically due to the project contract until the end of the planned milestones. There is a possibility for the DMSB to renew the contract annually for another year (after agreement with the manufacturer), the contract can be renewed two times as maximum. The manufacturer will be informed about the decision regarding the renewal until 30.09. of each year.

No “regulatory advantage“ will be afforded by the DMSB to the manufacturer, i.e. the DMSB, in the performance of its role as sports authority, will not offer any special treatment or concession to the manufacturer other than that which is mentioned in the current contract.

1.6 Supply Conditions

This term shall mean the conditions under which the manufacturer shall supply the electronic real-time transmission system onboard-kit to the competitors and the electronic real-time transmission system marshal kit and race control kit to the organizer.

Each manufacturer wishing to tender must describe in an appendix the specific supply conditions it is proposing.

The supply conditions must respect the absolute equality of all competitors and must define the price for supplying the electronic real-time transmission system onboard kit for the whole duration of the contract.

The supply conditions must define the price for supplying the electronic real-time transmission system marshal kit and race control kit for the whole duration of the contract.

A single price scale in Euro, including all the relevant taxes must be proposed.

2 Relations between the Manufacturer and the Competitors

This invitation to tender does not govern the relationship between the competitors and the manufacturer

The solvency of the competitors is not in any way guaranteed by the contract which shall result from this invitation to tender.

3 Subcontracting

The contract may not be assigned or transferred under any circumstances whatsoever without the express agreement of the DMSB; this condition also applies to subcontracting.

However, this express agreement is not required in the case of the assignment, transfer or subcontracting of the contract to a direct subsidiary of the, manufacturer.

4 Guarantee of the correct execution of this contract

- 4.1 The manufacturer which enters into the contract once its tender has been accepted must produce an attestation certifying that an insurance policy has been contracted in its name with a top-ranking international insurance company, these document covering both its liability as manufacturer for any and all action which might be taken to obtain compensation for prejudice caused by a manufacturing defect affecting the electronic real-time transmission system used pursuant to the contract, and its liability in the event that it fails to supply the quantity of electronic real-time transmission system required for the event. (see article 6.2).
- 4.2 The insurance cover is to guarantee the solvency of the manufacturer in the event that the manufacturer is held liable and must compensate third parties pursuant to a court decision or an amicable settlement following legal action taken to enforce the guarantee of either the manufacturer or the DMSB.

5 Governing Law and Language

- 5.1 All documents in connection with this invitation to tender shall be drafted in English or German. The language which shall prevail for the Interpretation of the provisions of the contract will be determined according to the selected supplier.
- 5.2 The governing law shall be German Law. It shall apply to this invitation to tender, as well as to the contract.
- 5.3 The Court having jurisdiction to settle any dispute which may arise between the DMSB, and the manufacturer in connection with this invitation to tender and the ensuing contract, regardless of which parties are in dispute, shall be the responsible authorized court in Frankfurt a. M. / Germany.

6 Failure to supply

- 6.1 If the manufacturer cannot meet the demand of the competitors / trackowner and has not provided for a production capacity allowing it to meet the demand of the entered cars/ marshal posts are occupied at the event, the manufacturer shall be liable for all costs, damages, legal expenses, etc., which this failure to supply has entailed.

Therefore, at the time the contract is entered into, the manufacturer must present a blanket insurance policy covering its liability in the event that it fails to supply the quantity of electronic real-time transmission system required for the races (see Article 4.1).

- 6.2 The contract shall contain the following clause releasing the manufacturer from liability if such failure to supply is due to a force majeure event:

“In the event that the manufacturer is unable to supply the quantities of electronic real-time transmission system required for the competitions in accordance with the provisions of this contract, the manufacturer shall not be liable if such failure to supply is due to a force majeure event, such as war, insurrection, earthquake, not, or depletion of stocks of raw materials, if such depletion affects all the companies which are rivals of the manufacturer and blocks the entire industrial production of electronic real-time transmission system.

Depletion of stocks of raw materials which does not affect the entire electronic real-time transmission system manufacturing industry shall not be considered a force majeure event. Strikes and other social strike or problems which prevent manufacture of the electronic real-time transmission system in the factories of the manufacturer are also not considered to be force majeure events.

No occurrence other than the force majeure events referred to above shall release the manufacturer from liability in case of failure to supply

7 Tenders

- 7.1 Tenders may be submitted to:

DMSB – Deutscher Motor Sport Bund e.V.
Silke Langhorst
Hahnstraße 70
60528 Frankfurt
Germany

or by E-Mail to slanghorst@dmsb.de

and should arrive there no later than 4 pm on **30th September 2019**.

A receipt shall automatically be issued to the tenderer and shall serve as an acknowledgement of receipt.

- 7.2 Any envelope received after this date shall not be opened and shall be sent back to the sender.
- 7.3 The selection of the candidate to be retained after this invitation to tender will be the responsibility of the DMSB.
- 7.4 Among other criteria, the DMSB will also consider the performance of the product.
- 7.5 The selected tenderer shall be informed by fax/e-mail no later than **11th October 2019**.

8 Technical conditions

- 8.1 Each manufacturer wishing to tender must supply electronic real-time transmission system that are in conformity with the technical specifications (Appendix I).
- 8.2 The quantity of electronic real-time transmission system necessary for the competition shall mean the quantity necessary for:
- all the competitors taking part in the Event
 - all marshal posts at the Nürburgring Nordschleife
 - all the events of the VLN series and the ADAC 24h Race as well as the ADAC 24h Qualification Race

9 Delivery of the real-time transmission System

The manufacturer must ensure the transportation and delivery of the electronic real-time transmission system to each race event and the and must supervise the distribution to the teams and the installation in the cars

The manufacturer must ensure the technical support to each race event.

At least one representative of the manufacturer must be available throughout each event of the race.

List of appendix

Appendix I: Technical Specifications / System Requirements

Cahier de Charges Electronic Flag Signals in Motorsport

Contractor	<i>Deutscher Motor Sport Bund e.V.</i>
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1 Project Description

1.1 Introduction and target definition

Enhancement of safety – specifically for the drivers and the safety marshals – by increasing the capacity of perceiving flag signals through an electronic real-time transmission of the marshals' flag signals into the driver cockpit, under permanent surveillance and control by Race Control.

Effective, comprehensive establishment of an easily transferable technology of the real-time transmission into the driver cockpit and to the Race Control by means of innovative technologies and further developments.

1.2 Description of the contractor

The Deutscher Motor Sport Bund e.V. (DMSB) was founded by the ADAC, AvD, DMV and five recognized regional motor sport associations and represents the governing body for German automobile and motorcycle sports. At present, the three support associations (ADAC, AvD, DMB), fifteen recognized regional motor sport associations as well as four additional members (ACV, ADMV, PCD, VfV) belong to the DMSB. As Sporting Authority for automobile and motorcycle sports, DMSB represents the German motorsport as member of the international associations Fédération Internationale de l'Automobile (FIA), Fédération Internationale de Motocyclisme (FIM) and FIM Europe as well as of the German Olympic Sports Confederation e.V. (DOSB).

The statutory tasks of the DMSB include amongst others the control of the organisation of motorsport in Germany under standardized rules as well as information and improvement tools to enhance safety in motorsport for the benefit of participants, spectators and officials/marshals.

1.2.1 Description and background of the planned system

- The use of electronic flag signals shall enhance the drivers' perception of relevant information.
- As a consequence, major accidents and the endangering of safety marshals and emergency personnel can be avoided.
- The direct transmission into the cockpit results in a more disciplined behaviour of the participants due to a corresponding reporting/control of the system.
- With the support of new innovative technologies, Race Control can directly intervene into the running of the race without any delays.
- The work of the safety marshals at the track can be supported and safety enhanced. The effect of the action is moreover optimized.
The attractiveness of the safety marshals' work is increased through the introduction of state-of-the-art technologies. The lack of safety marshals can in the future be compensated by innovative technologies.

1.3 Product overview and application

1.3.1 Current situation

As starting point for the project, we wish first of all to illustrate the process of the perception and understanding of an information in road traffic. In relation to road traffic, about 90% of all information is absorbed through the eyes. In addition to relevant information such as traffic signs, this includes non-relevant information such as advertising banners etc. In order to proceed correctly in road traffic, the driver must absorb, process the information and implement adequate patterns of actions. It is a basic principle in this context that you can only perceive and process what you actually have seen in order to then implement any actions. In the dark, there is an increased challenge to distinguish between relevant and non-relevant information. The result is a loss of important information which, for example, restricts the driver's orientation. The resulting behaviour of the driver may have a negative effect on road safety. (cf. "Wahrnehmung von Verkehrszeichen und Straßenumfeld bei Nachtfahrten im übergeordneten Straßennetz"; Dipl.-Ing. Romy Reinisch; Technischen Universität Darmstadt)

The aforementioned type of problem can also be recognized in motorsport where the challenges are even increased due to factors such as competition, speed and other negative impacts on the perception. Parameters like race distances, no breaks for concentration restoration, climatic extremes in the cockpit, noise, rain and poor visibility, vibrations and the comprehensive input of relevant information to be quickly processed such as radio communication, observation of the field as well as light and flag signals result in an extreme physical and mental-physical stress on the drivers. They must recognize and process relevant information such as for example flag signals of the safety marshals and implement suitable patterns of actions (perception of stimuli, processing of stimuli and reaction). In addition to relevant information, there is a number of non-relevant information at the race track, such as advertising banners, TV walls, grandstands, fans with flags and banners and much more. In relation to the perception of stimuli, the processing of stimuli and reaction, cognitive and anticipatory abilities, fatigue and an economic resource management and regeneration, the aforementioned parameters are even increased within the framework of long-distance competitions in the dark, like for example during the Nürburgring Nordschleife ADAC TOTAL 24h Race. (cf. "Motorsport=Leistungssport?) aktuelle Beurteilung für den Automobilsport"; Dr. med. Michael Scholz (Verbandsarzt für Automobil im DMSB)

Therefore, partly serious accidents which are a consequence of the participants' negligence happen again and again in races. This situation compromises safety not only in relation to the participants but also in relation to the safety marshals and the rescue teams working on the track.

1.4 Product details

1.4.1 Functional requirements

The basic idea is to extend the traditionally waved flag signals by electronic flag signals. The flag signals shall be sent to the cars via a wireless data transfer. An onboard unit installed in the car should make it possible to receive the signals and to reproduce an audible and visual display.

At the beginning of the project, four flag signals are to be defined:

- Yellow (Level I)
- Double Yellow (Level II)
- Code60 (Level III)
- red (level IV)

In the course of the project, the option must exist to add more flag signals to this enumeration.

The initial situation “Stage 0” indicates that the track is clear, i.e. without any obstructions (for example accidents, rescue teams on the track etc.). The onboard unit in the car shows a neutral screen.

A change of Stage 0 (clear track) is shown by the indication of one of the 4 (in the first stage of the project) defined flag signals*. This first flag signal after Stage 0 is indicated on the display at the moment of the entering a defined sector.

For the flags yellow (grade I), double yellow (grade II), Code60 (grade III) and red (grade IV) the flag signal must be shown on the display from a defined distance (approximately 20-350m) in front of the post with the **initial signal** and the distance to the post shall be counted down in metres (pre-warning).

The flags double yellow, Code60 and red shall be accompanied by an audible warning. The system must autonomously recognize whether it is in a sector with an active flag signal and accordingly issue a pre-warning if it is the **initial signal** and/or an audible warning if it concerns a signal of grades II, III or IV (see Supplements).

The driver would like to be informed about active flag signals as early as possible in order to avoid dangerous situations as a consequence of missing a signal.

Acceptance Criteria:

- Clear display
- Only relevant information
- Information easy to be read
- Easy to understand
- Clearly audible warning signal
- Reliable

The safety marshals wish a system to be as easy as possible to make his work safer.

Acceptance Criteria:

- Easy handling
- No additional workload
- Failure-free

Race Control would like to have a system which is as precise as possible in order to avoid accidents as a consequence of missing flag signals or to make such accidents more traceable.

Acceptance Criteria:

- Data transmission as accurate as possible
- Data transmission as quickly as possible
- Time stamp when a flag signal is activated and transferred to the car
- Central control
- Tamper-proof

The functional requirements are detailed in the following:

Requirements in relation to the signal transmission:

- Wireless data transmission
- Real-time data (max. delay 300ms)
- Flag signals (yellow/ double yellow/ Code60/ red), additional flag signals shall be provided
- Transmission of the displayed flag signals and/or electronic light panels to the vehicle's onboard unit
- Tamper-proof against external intervention

Requirements in relation to the duration of the display:

- Pre-warning in front of the initial flag signal at a distance which remains to be defined
- The pre-warning must be defined in relation to the onsite conditions (track layout, topography, distance between the posts)
- Flag remains visible in the onboard unit up to the arrival at the post with the next flag signal
- It must be able to divide the track into different sectors

Requirements in relation to the onboard unit:

- Visual display of the current flag signal
- Meter indication as a count-down for the pre-warning
- Audible warning signal for pre-warning, except for yellow flag signal (different warning signals for different flags)
- Messages from Race Control (short messages in text form, approx. 8 characters)

Requirements in relation to the control of signals:

- Activation of the signal by the marshal (at best by showing the traditional flag/ the light panel)
- Signal control by Race Control also required

- Hierarchies of signal control must be defined (Race Control has priority over marshals)
- Signals received must be recorded with a time stamp

1.4.2 Non-functional requirements (performances, data)

As a first step of the project, the electronic flag signals shall be introduced at the Nürburgring Nordschleife. The special characteristic of the Nürburgring Nordschleife is in general its track distance and its topography. About 200 track marshals with an average distance of 160m between one another must be equipped. The track marshals are subdivided into 17 sectors with one main post in each sector. The distance between the main posts is 2000m on the average. The main problem is the dependence on the positions of the displayed flag signals and the time-shifted activation at the corresponding posts.

The system shall represent an open platform in order to implement it also at other race tracks and in other disciplines. The manufacturer must provide support of the system at the race track.

The retail price of the onboard unit shall not exceed 250€ plus VAT.

1.5 Project organisation

See Tender

1.6 Timeframes and deadlines

See Tender 1.1 Targets

1.7 Supplements



