



New line and destination displays for 13G/14G trams

Program of Requirements for delivery and installation of outside line displays

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Colophon

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1 Glossary and abbreviations

The terms used that are written with a capital letter have the following meanings in this Program of Requirements (PoR):

FAT	Factory Acceptance Test
GIVA	Generieke ICT Voertuig Architectuur (Dutch) <i>Generic ICT Vehicle Architecture (English translation)</i>
GVB	Public transport company of Amsterdam. GVB is the publisher of this PoR.
HAV	Tram depot Havenstraat in Amsterdam, The Netherlands
HWR	Main Workshop Rail in Diemen, The Netherlands
LEK	Tram depot Lekstraat in Amsterdam
Line displays	The displays visible from the outside of the tram which show the line number of the tram (in number and color code) and final destination information.
LWP	Line Workshop Tram
Contractor	The tenderer with whom GVB enters into an Agreement on the basis of this tender for the execution of the assignment.
Preventive maintenance	Maintenance activities which are condition induced or which follow a predefined schedule in order to prevent defects from occurring.
PoR	Program of Requirements
PvA	Action plan / plan of action
Proof	Requirement with Proof
Req	Requirement without Proof
RM (Railmaterieel)	Rail Equipment business unit: GVB's department for rolling stock maintenance.
WP2000	Wet personenvervoer 2000 (Dutch) <i>Passenger Transport Act 2000 (English translation)</i>

2 Introduction

2.1 Goal

This document represents the Program of Requirements (PoR) for new line displays for GVB's entire SIEMENS Combino tram fleet. The new line displays need to:

- have at least the same functionality as the current line displays,
- last at least the remaining life of the trams and,
- perform within the set requirements of availability, reliability, maintainability and aesthetics.

By means of a public European tender, GVB is looking for a party that will supply, install and commission the new line displays at the location of GVB.

This PoR functions, as part of the Agreement to be made between GVB and the Contractor, as a description of the scope and the requirements which the purchased goods, the contractor and its activities must meet.

2.2 Background

The Combino trams were delivered to GVB by the company Siemens in the years 2003 and 2004, together with the current line displays which are still in use today. The trams are referred to as 13G and 14G, which are one-way (single-headed) and two-way (double-headed) trams respectively. Due to the increasing repair costs for the displays, GVB has decided to execute a one-off renewal of the line displays for use during the rest of the lifespan of these trams in the next 12 to 15 years.

2.3 What is requested

Line displays are the displays that are visible from the outside of the tram (**figures 1.2 to 1.5**). The functionality of the line displays concerns the indication of the line (route) number and the final destination.

Each tram has a line display at four locations, namely on the front, rear and both sides. These four line displays differ from each other. All four line displays of all 155 trams need to be replaced and the purchase of spare is also within scope of the PoR.

The contractor must be able to provide guarantees regarding the lifespan of the line displays and the minimum period during which GVB can have repairs carried out and during which the same line displays can still be purchased as new.

In general terms, the new line displays should:

- be LED-displays;
- be able to communicate over ethernet with the Generic ICT Vehicle Architecture (GIVA) information system of GVB; GIVA will control the line displays;
- function reliably while driving the trams;
- be safe for passengers and bystanders at all times and safe for personnel during maintenance and usage;
- be pleasant and healthy to work on and with;
- contribute to a positive experience of the traveler's journey.

GVB is looking for a party that supplies the new line displays, makes them fit and also installs them and sets them up for operation. The contractor should be able to carry out this complete replacement process as a project.

Having the complete fleet of trams operate with the new line displays is required by the end of the year 2022. The scope of the assignment and the requirements are detailed in **chapter 3** and **chapter 4** respectively.

2.4 About GVB

GVB is a Dutch public transport company and provides public transport in the municipalities of Amsterdam, Diemen, Weesp and Duivendrecht. The latter one being part of the municipality of Ouder-Amstel. In addition, it operates two lines in Amstelveen, four lines in the Haarlemmermeer and ferries across the IJ and the North Sea Canal. Pursuant to the Passenger Transport Act 2000 (WP200), the Amsterdam public transport concession has been granted to GVB. GVB sees it as its mission to transport passengers safely, hospitably and punctually according to timetable.

Within GVB, the Rail Equipment business unit 'Railmaterieel' (RM), with approximately 300 employees, takes care of the technical maintenance, overhaul and modifications of trams and metros. This is done on behalf of the owner of the rolling stock.

Repairs and maintenance are carried out at the Line Workshop (LWP) at the locations Lekstraat (LEK) and Havenstraat (HAV). In addition, the line workshops have a so-called fast service breakdown service. Major maintenance, overhaul and production of parts and damage settlement takes place in the Main Workshop Rail (HWR) at the Diemen location.

The vehicle fleet consists of more than 300 rail vehicles, divided into five types. Based on performance indicators, Railmaterieel focuses on optimal performance of the vehicle fleet in terms of safety, reliability, availability and comfort, at a competitive cost level.

It is the Railmaterieel that carries out the tender and issues any subsequent assignment to the Contractor.

2.5 Structuring of the description of the requested

In the next two chapters 3 & 4 the description of the requested is formulated. For example, chapter 3 describes the scope of the tender to which the PoR relates and chapter 4 contains a summary of the requirements which are set by RM.

The definition of requirements and how the requirements are classified is explained below.

If a disproportionate and / or negative effect is suspected by a specific requirement, the Contractor is invited to indicate this and furthermore to make an proposal for improvement, see chapter 2.6.

Definition of requirements

A requirement is a property that must absolutely be met within the framework of the Agreement. As stated in the Tender Guidelines, failure to meet a requirement means exclusion from the procedure meaning the tenderer is unable to win the contract.

The requirements are divided into two categories. This is marked per line for each requirement in the column between the requirement number and the requirement description:

1. Requirement with Proof (Proof)

These mainly concern technical aspects of what is requested. The Contractor is expected to indicate in advance how the Contractor meets these requirements in the fill-in list (this will be included with the tender);

2. Requirement without Proof (Req)

These mainly concern procedural requirements to which the Contractor will be bound, but for which it will be difficult to provide evidence in advance.

2.6 Approach to inaccuracies, conflicting requirements and / or suggestions

The information in this Program of Requirements has been compiled with great care. The information about the existing situation has been provided as complete as possible as it is currently known to GVB. Although the information provided has been compiled with great care, changes or inaccuracies are reserved. Insofar as not stated in this Program of Requirements, the services offered must be suitable for the purpose for which these services are hired. At all times, the assignment must be carried out with due care and comply with all legal requirements. If this Program of Requirements contains ambiguities, inconsistencies or errors, you are invited to report this immediately after discovery, even before submitting your Tender, (via a message or the Question & Answer module) to the leadbuyer of this tender on Tendered.

GVB has formulated minimum requirements in the form of this Program of Requirements. Your Tender must at least comply with the Program of Requirements as presented in this document. All stated Requirements are therefore hard Requirements (knock-out criteria). If you suspect that one or more of the Requirements set has a disproportionate price-increasing effect, the Tenderer is invited to make suggestions for adapting the Program of Requirements by means of the Question & Answer module in Tendered. For more information, see the Tender Guidelines.

On the price sheet you must include all costs involved in the execution of this assignment (ie the Requirements that you must).

3 Scope

3.1 Description of the requested

This PoR for the delivery, installation and commissioning of new line displays of the trams relates to four types of displays that are in use with the type 13G / 14G tram “Combino”. It concerns 155 trams in total. The requested displays apply to:

- The GVB tram series referred to as ‘13G’ (one-way tram) consisting of 151 trams;
- The GVB tram series referred to as ‘14G’ (two-way tram) consisting of 4 trams.

The line displays show, from the different positions, information for the travelers about the tram, such as the line (route) number and the destination. The displays are installed in four different places in the tram. **Figure 1.1** on the next page shows both the one-way tram and the two-way tram. **Figures 1.2 to 1.5** show pictures of the current displays.

In the 13G (one-way tram) there are four different displays, these are:

- **[aand. 3]** front display one piece per tram;
- **[aand. 5]** rear display one piece per tram;
- **[aand. 7]** line number side display (road side) one piece per tram;
- **[aand. 9]** line and destination side display (stop side). one piece per tram.

The 14G (two-way tram) has not four but two types of displays because the front and rear of the tram are identical. This means the following two displays are present:

- **[aand. 3]** front display two pieces per tram;
- **[aand. 9]** line and destination side display (stop side) two pieces per tram.

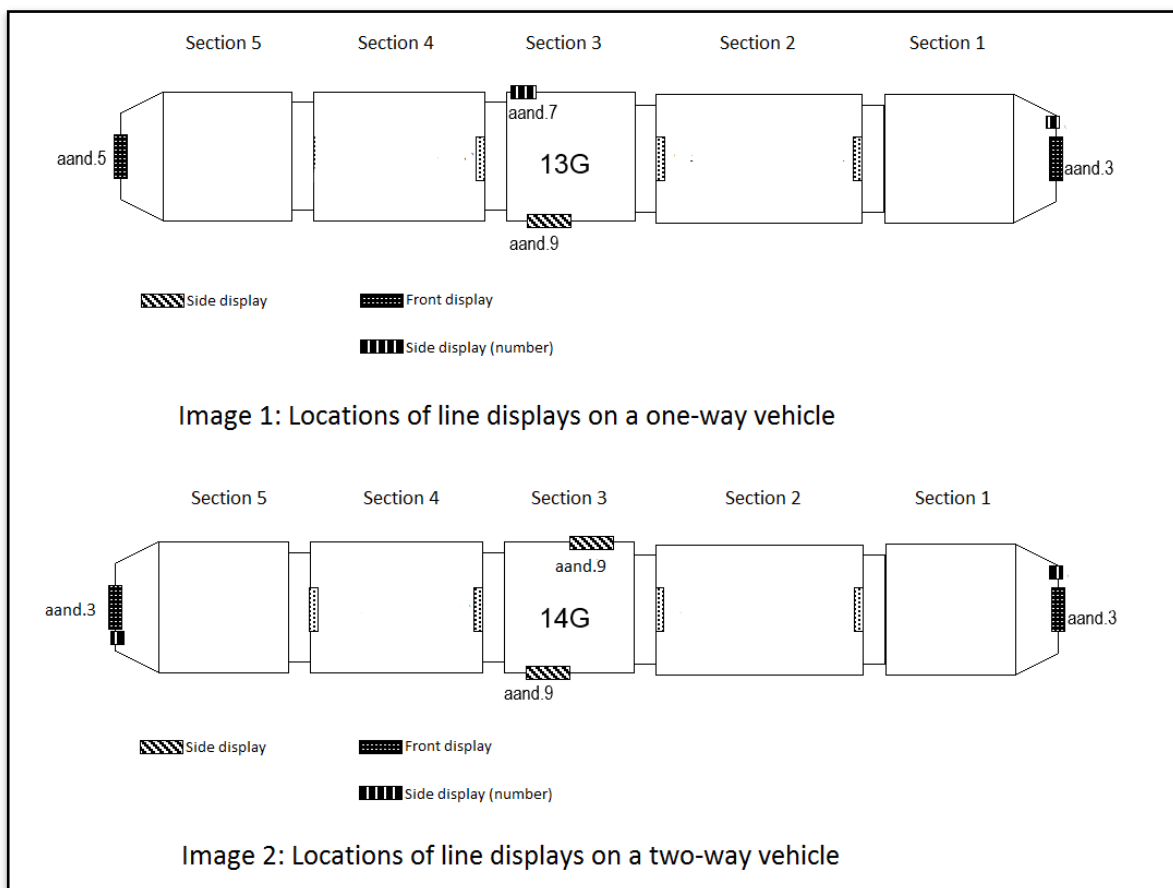


Figure 1.1: Installation locations on the 13G and 14G trams, respectively the one-way and two-way trams



Figure 1.2: Front display [aand. 3]



Figure 1.3: Rear display [aand. 5]



Figure 1.4: Line number side display [aand. 7]



Figure 1.5: Line- and destination display [aand. 9]

The displays are provided with signals via the already existing, managed network on the tram. This network consists of a number of switches that are connected so that all peripheral equipment in the tram can be connected to this network.

All displays must be connected to network switches which are already present in the tram. This allows the displays to receive the necessary information via an Ethernet protocol.

Below is an overview drawn displaying the locations of the switches (**numbered light-green blocks 1 to 7 in figure 1.6**).

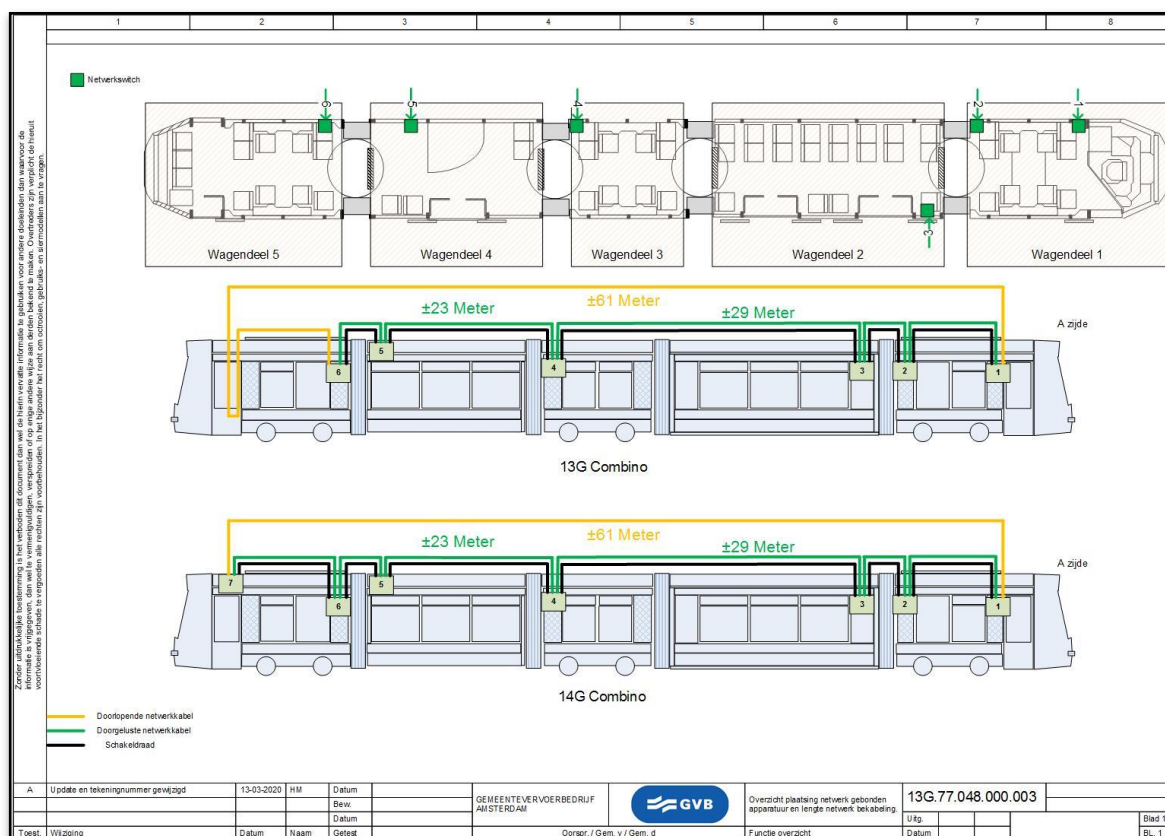


Figure 1.6: Locations of the network switches (numbered light-green blocks)

3.2 Specification of order quantities

The following quantities are requested for the 13G trams:

- Front display [aand. 3]: 151 pcs;
- Rear display [aand. 5]: 151 pcs;
- Line number side display (road side) [aand. 7]: 151 pcs;
- Line and destination display (stop side) [aand. 9]: 151 pcs.

The following quantities are requested for the 14G trams:

- Front display [aand. 3]: 8 pcs;
- Rear display [aand. 5]: n/a;
- Line number side display (road side) [aand. 7]: n/a;
- Line and destination display (stop side) [aand. 9]: 8 pcs.

Reserve stock:

- Front display [aand. 3]: 5 pcs;
- Rear display [aand. 5]: 5 pcs;
- Line number side display (road side) [aand. 7]: 5 pcs;
- Line and destination display (stop side) [aand. 9]: 5 pcs.

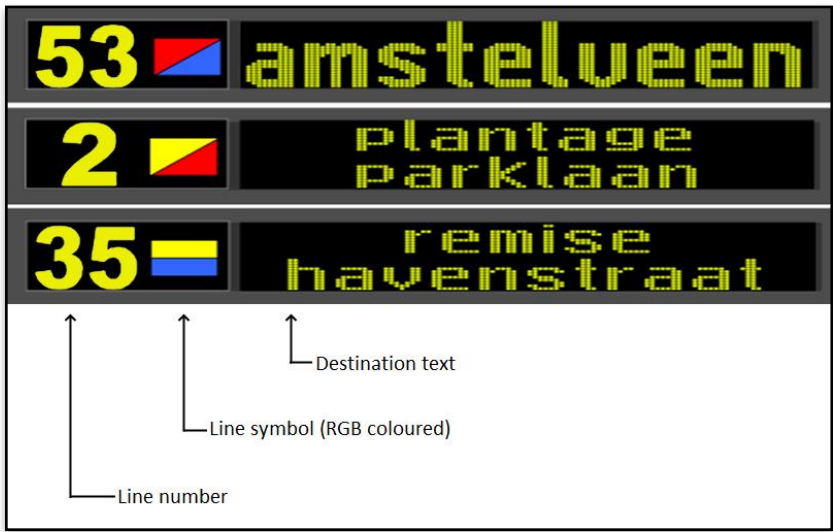
4 Requirements

4.1 General requirements

Nr.	Cat.	Description
1.	Req	The Contractor supplies, installs, coordinates and realizes functioning line displays, including the certified network cabling between the line displays and the network switches of the GIVA network* already present in the tram. Implementation must be completed in accordance with the scope as described in the previous chapter.
2.	Req	The new displays must take over the functionality, being the real-time provisioning of information to the travelers, of the existing line displays. <i>As described in the requirements that follow below.</i>

4.2 Functional requirements

3.	Proof	The supplied displays need to display a clearly readable line number and destination text. This means: The front and rear displays can be read from at least 30 meters distance by the passengers. The side displays can be read from at least 15 meters distance by the passengers. <i>The contractor needs to proof this by providing calculations for this requirement in the tender phase.</i>
4.	Proof	The displays need to be readable at the distances during the daytime, night-time and in all weather conditions that normally occur in the Netherlands. Climate zone II needs to be taken into account from the standard NEN-EN 1450-1.
5.	Proof	The viewing angle of the displays needs to be at least 120°, both horizontally and vertically.
6.	Proof	The brightness of the displays needs to be automatically adjusted by the intensity of the ambient lighting. This includes both streetlights, sunlight and lighting from other traffic.

7.	Proof	The front display [aand. 3] needs to be able to, in one housing, show a RGB coloured line symbol as well as a monochromatic line number and a monochromatic text of 1 or 2 lines. An example is shown in Figure 4.1 below.  Figure 4.1: Example of the front display
8.	Proof	All texts on all displays, apart from the coloured line symbols on the front display, need to be depicted with the same, monochromatic, colour. This colour needs to be Amber, by preference with the following specification: LED colour(wavelength): Amber 590nm ±5
9.	Proof	The destination text on the displays needs to be able to show at least 20 characters (alphanumeric). The destination text needs to have the option to show the text fixed in place but also, if this is wanted by GVB, to show the text scrolling.
10.	Proof	The line number on the displays needs to be able to show at least 4 characters (alphanumeric).
11.	Proof	The displays need to support the ASCII standard characters voor the destination texts.
12.	Proof	The line symbols need to be freely programmable by GVB and are not limited by the examples given in appendix III. The line symbols need to be stored in the front displays [aand. 3]. Via the GIVA network the display is told which line symbol needs to be shown.

4.3 Requirements for dimensions

13.	Proof	The new front displays [aand. 3] need to fit in the vehicle in the same place as the current display. The current display has the following dimensions (h x w x d): 325 x 1640 x 90 mm. <i>During an on-site inspection there is the opportunity to check the positions and dimensions in the trams.</i>
14.	Proof	The new rear displays [aand. 5] need to fit in the vehicle in the same place as the current display. The current display has the following dimensions (h x w x d): 325 x 1640 x 90 mm. <i>During an on-site inspection there is the opportunity to check the positions and dimensions in the trams.</i>
15.	Proof	The new line and destination displays [aand. 9] need to fit in the vehicle in the same place as the current display. The current display has the following dimensions (h x w x d): 250 x 1100 x 60 mm. <i>During an on-site inspection there is the opportunity to check the positions and dimensions in the trams.</i>
16.	Proof	The new line number side displays [aand. 7] need to fit in the vehicle in the same place as the current display. The current display has the following dimensions (h x w x d): 232 x 390 x 120 mm. <i>During an on-site inspection there is the opportunity to check the positions and dimensions in the trams.</i>

4.4 Requirements for mounting and demarcation

17.	Proof	The new displays need to be constructed in such a way that they can be mounted on the brackets that are already present in the trams. These brackets are used to mount the current display. If an adapter frame or bracket is necessary the contractor needs to supply them with the displays. The display and adapter frame or bracket will be offered to GVB as one item. <i>During an on-site inspection there is the opportunity to check the positions and dimensions in the trams.</i>
18.	Proof	The mounting of the displays, including wiring, needs to be done in a sound and proper manner. The mounting needs to, at least, make sure the displays are secured at all times and are resistant to movement and vibrations that occur during the operation of the trams. The mounting and overall finish will be judged by GVB during the product- and process validation.
19.	Proof	The displays, and if necessary the adapter frames or brackets, need to be able to withstand shocks as is described in the standard EN 61373. The displays belong to category I class A.

4.5 Requirements for maintenance and repair

20.	Proof	The displays need to require no preventative maintenance to maintain their function.
21.	Proof	Each display needs to be able to replace in 20 minutes time. This time is calculated from the start of demounting. All other activities such as finding the right tools and securing the tram are not included in this calculation.
22.	Proof	The contractor needs to state the MTBF (including the method and calculations used) of all displays.
23.	Proof	Each display needs to be able to be exchanged by one mechanic. The exchange will be done in a workshop of GVB.

4.6 Technical requirements

24.	Proof	The displays need to be powered by the on-board supply of the tram which supplies 24 V DC. The voltage ranges from 16,8 to 30 V DC as is specified in the standard NEN-EN 50155.
25.	Proof	The displays need to comply with class S1 of table 6 from the NEN-EN 50155 regarding power interruptions.
26.	Proof	In the tram the 0 Volt of the power supply is connection to earth on one point only. Creating earthing loops is not allowed. The earthing of the display cannot be connected to the 0 Volt of the display's power supply. <i>The contractor needs to make a detail design of the earthing principle of the displays. This design needs to be approved by the technical project leader of GVB.</i>
27.	Proof	Each display needs to be able to withstand unexpected and direct interruptions of the supply voltage. This means the display should automatically restart after the supply voltage is returned without any loss of functionality.
28.	Proof	The current displays are fused with a 1-pole 10 A circuit breaker with a B-characteristic. If this is not sufficient the contractor can place another circuit breaker if the installation location stays the same and only after this is discussed and agreed to by GVB. Also the contractor needs to proof, with calculations and drawings, that the used wiring is adequate for the circuit breaker.
29.	Proof	All, to be supplied, cables and connectors need to be secured against loosening by vibrations. For connectors this means that they need to have some locking mechanism to prevent unintended loosening.
30.	Proof	The displays need to function properly in all conditions stated by the NEN-EN 50125-1 Railway applications - Environmental conditions for equipment - Part 1: Rolling stock and onboard equipment: Air temperature Class T1 (Table 2).
31.	Proof	The displays need to function properly in all conditions stated by the EN-IEC 60721-2-1 Classification of environmental conditions – Part 2-1: Environmental conditions appearing in nature - Temperature and Humidity: Group b.
32.	Proof	The contractor needs to use LSZH (Low-Smoke, Zero Halogens) cabling in compliance with the NEN-EN-IEC 60745-1 and IEC 61034-2 regarding network/ethernet cabling.
33.	Proof	The contractor proves that the offered displays and cabling will be in compliance with the fire standard described in NEN-EN 45545-2 Railway applications - Fire protection on railway vehicles - Part 2: Requirements for fire behaviour of materials and components.

34.	Proof	The contractor proves that the offered cabling is in compliance with the NEN-EN 50306-4: Railway applications - Railway rolling stock cables having special fire performance - Thin wall – Part 4: Multicore and multipair screened or not screened sheathed cables.
35.	Proof	The displays and cabling need to be compliant with the NEN-EN 50121-3-2: Railway applications – Electromagnetic compatibility - Part 3-2: Rolling stock – Apparatus regarding EMC.

4.7 Requirements for control by means of GIVA

The displays will have to be included in the network which is already present in the trams. This network is called GIVA (Generic ICT Vehicle Architecture). Various services are active within the GIVA network ensuring that the information is available for all peripheral equipment. The following requirements are set to enable integration into the GIVA network.

36.	Proof	The displays must use the External Display Adaptation service as specified in Appendix I . There is 1 port per display available on the network switch in the tram. GVB will indicate which port is intended for which display.
37.	Proof	The displays must meet the ITxPT guidelines in order to function in our GIVA network.
38.	Proof	The displays must be able to find the necessary services on the network via DNS-SD.
39.	Proof	All displays in the trams must be able to be monitored via SNMP, supporting both SNMP traps and query / response. Peripheral equipment will request the location of the SNMP trap receiver from the Service Directory and publish its SNMP client location in the Directory Service.
40.	Proof	Service interfaces that support Subscriptions must support at least 20 concurrent subscriptions.
41.	Proof	Service interfaces that support Subscriptions must send an update message every 60 seconds, even if the internal data does not change. Note: This concerns a keep-alive mechanism.
42.	Proof	Each display performs self-diagnostics, periodically, and during vehicle start-up, notifying the driver if any malfunction occurs.
43.	Proof	The start-up time of the displays should be less than 30 seconds.
44.	Proof	All displays must be able to shut down individually within 60 seconds, from shutdown command to completely shut down.
45.	Proof	Each display must be able to withstand start-up behavior such as the phased availability of required service interfaces and restart of required services.
46.	Proof	All network connectors must be M12 X-coded or D-coded.
47.	Proof	Where custom software is involved, the Contractor must sign an ESCROW agreement.
48.	Proof	The Contractor must provide the software and firmware updates to GVB, so that GVB can test and install them in a test environment in Diemen with the guidance of Contractor where necessary.
49.	Proof	The Contractor takes care of all software and hardware licenses as part of the assignment. GVB will take ownership of the software and all supporting software tools and environments as part of the delivery. The Contractor must be available for support throughout the life of the displays.

4.8 Process Requirements

50.	Proof	During the tendering phase, the contractor must submit a draft Plan of Action (PvA) and planning for the design, installation and commissioning of the new displays in the GVB trams at the location of GVB. The contractor will have a maximum number of consecutive working hours per tram (see requirement 55) to extract the old displays, install the new displays including cabling and deliver the configuration in working order. After this, the tram must be ready to be able to return to the operation immediately. In the Plan of Action, the contractor must indicate what it requires from GVB in terms of facilities, resources and services. Requirements 53 to 61 must be included in the PoA. For clarification, Appendix IV sets out what is minimally expected of the PoA. Final PvA: After being awarded the assignment, the Contractor submits a final version of the Plan of Approach to the GVB project manager. After agreement between the Contractor and GVB, the continuation of the project will be carried out.
51.	Proof	For the entire process of development, validation and delivery of (partial) solutions for the system described in this PoR, the Contractor must work in accordance with the standards laid down in: NEN-EN 50155 Railway applications - Rolling stock – Electronic equipment.
52.	Proof	The Contractor cooperates at its own expense with product validations and process validations at location of GVB, as long as is needed to deliver in accordance with the set requirements. If more than two product validations and / or more than two process validations are required due to the actions of the Contractor, the internal costs of GVB will be charged to the Contractor. The content of both validations is described in Appendix IV.
53.	Proof	During the entire project, the Contractor provides 1 central point of contact, namely a project leader with authority to take decisions.
54.	Proof	The following, chronologically ordered, phases and maximum lead times are required after award: - Design phase: maximum 3 months; - Production and delivery time: maximum 4 months; - Initial phase with product and process validations: maximum 3 months; - Series installation (all trams): maximum 9 months; - End of project: before December 2022.
55.	Proof	Installation and commissioning takes place at the location of GVB in Amsterdam or Diemen. This should take place in between rush hours, from 10:30 am till 3:30 pm, and / or during the evening / night hours, after 8:00 pm till 5:00 am.
56.	Proof	During the series installation, 5 trams per week must be converted.
57.	Proof	The Contractor will deliver the delivery documentation to the GVB project manager by tram immediately after finalized conversion.
58.	Proof	The contractor is responsible for ownership and managing of the hardware to be installed up to the moment of a proven properly installed and working configuration. GVB does not provide for stock management during the project.

59.	Proof	In addition to installation, the Contractor also provides for the removal and disposal of the parts to be removed (the old displays). After extraction, it must be disposed of immediately, it cannot be stored on GVB grounds. The Contractor must also remove all involved packaging and packaging materials from the GVB premises. Disposal and processing of packaging materials, packaging materials and removed old parts must take place at an establishment licensed in accordance with the Environmental Management Act. Contractor must submit (a copy of) the deposit certificates. All costs for the removal of waste and old materials will have to be included in the Contractor's offer.
60.	Proof	The contractor must be ISO 9001 certified.
61.	Proof	For working on location of GVB: • When installing at the location of GVB, the Contractor or authorized installer and technicians must formally accept and act accordingly to the safety regulations of GVB. • The Contractor must provide GVB with a Safety Plan approved by GVB. • The Contractor or authorized installer must have a valid VCA ** certificate. A VCA * certificate is sufficient for subcontractors. The installation crew who carry out the installation and commissioning activities for the Contractor must be in possession of a VCA-Basic or VCA-VOL diploma.

4.9 Requirements for documentation and instructions

62.	Proof	All documentation must be in Dutch and must be legible. Technical specifications of parts, purchased parts, may only be offered in English or German after approval by GVB. <i>GVB expects at least product specifications, a user manual and an installation manual for this documentation.</i>
63.	Proof	The Contractor must provide at least written instructions, in Dutch, about the configuration and installation of any type of display on the trams.
64.	Proof	GVB may reproduce, change and publish documentation for use within its organization without owing any further payment, provided that indications of copyrights and the like are maintained thereon.
65.	Proof	All documentation must be approved before release by the Maintenance Engineer of GVB.

4.10 Purchasing Requirements

66.	Proof	The Contractor must submit a total offer* and divide it into: 1. Materials**; 2. Design and adaptation costs to fit displays in GVB SIEMENS Combino trams; 3. Installation and commissioning at the location of GVB in Amsterdam or Diemen. Contractor must specify which costs apply to which periods. * GVB reserves the right to choose to purchase one or more parts of this subdivision and is therefore not obliged to purchase the offer in its total. ** Notes on Materials: The Contractor must provide a statement of: • The total price including discounts for the specified quantities mentioned in chapter 3.1, including all necessary mounting and connection materials, such as bracket / frame, plugs and cables. In addition, the Contractor must indicate the pricing of each type of display for the purchase of the displays in the future in the unlikely event that they have to be replaced. The prices to be quoted are: • Price per display; • Price per 5 displays per type.
67.	Proof	The Contractor must issue a warranty period on the materials and installation-related matters of at least two years. Warranty starts per tram at the time of delivery of the installed and working configuration.
68.	Proof	The Contractor must guarantee that it will be able to supply the original parts, or Form-Fit-Function replacements, for the next 15 years.
69.	Proof	GVB has a last-buy option on imminently obsolete parts of the displays and the Contractor himself will report this to GVB one year before the last-buy option expires.

70.	Proof	The ownership of all hardware is transferred from Contractor to GVB, per tram, at the time of accepting by GVB of the installed and working configuration. Contractor must be self-sufficient with regard to stock management and delivery of goods from its own storage to the tram in the GVB depot.
71.	Proof	The contractor invoices GVB per 5 vehicles delivered and accepted. GVB will process payments by invoice and does not work with down payments.

4.11 Logistical requirements for parts and reserve stock after project completion

72.	Proof	Reorders for replacement displays and / or sub-parts must be delivered within two months after ordering.
73.	Proof	Contractor must specify its RMA procedure and lead times. Repairs and replacements under warranty must be completed within a maximum of three weeks.

4.12 Packaging requirements for components that are not installed during this project

74.	Req	The displays must be delivered on pallets of 1200 x 800 mm (Euro pallet size). <i>Deviations from this pallet format are only possible if permission has been given by the goods receipt of GVB.</i>
75.	Req	A maximum of 3 heightened edges may be used on a pallet.
76.	Req	The displays must in all cases be securely attached to the pallet for transportation.
77.	Req	A delivery must always be accompanied by a correct packing slip, number of pieces per packaging, weight, GVB article number and GVB purchase order number.
78.	Req	All quality and / or test certificates must be enclosed for each packaging per delivery.
79.	Req	The pallets must be packed all around, including the bottom, splash-proof.
80.	Req	The packaging must be coded on at least 2 sides. (1x long side, 1x short side) - GVB-artikelnummer (itemnumber) (6-digits) - Purchase order number starting with 45
81.	Req	Deviations from the above packaging requirements (this chapter 4.12) must be discussed with GVB goods receipt and can only be applied after approval by GVB.

4.13 Requirements for social accountability

82.	Proof	The Contractor must declare that no substances are used that are prohibited by the then applicable Dutch and European environmental legislation.
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5 Appendices

Appendix I [GIVA-externaldisplay-IRS v1.0.pdf](#)

Appendix II [GIVA platform requirements v3.0.pdf](#)

Appendix III [Examples of line symbols.pdf](#)

Appendix IV Minimum requirements for Plan of Action

Upon submission of the tender, the Contractor provides a draft PoA in accordance with the requirements set in this PoR, and after being awarded the contract a final PoA, containing at least:

- Description of his personnel commitment to this project, such as mechanics, team leader and / or project leader. GVB requires at least a decision-making project leader as a central point of contact during the entire duration of the project.
The Contractor must also state how the progress of the project is safeguarded. For example, when the project manager or one or more scheduled technicians are unable to perform their work;
- Planning and description of activities including at least:
 - Design phase: How long does the Contractor need, what does the Contractor need from GVB. What does the Contractor deliver in this phase and how does the Contractor wish to obtain approval for the design.
At the end of this phase, a FAT (Factory Acceptance Test) is performed so that requirements can be verified. The content of the FAT is drawn up by Contractor together with GVB. The execution takes place at the Contractor's location.
 - Production and delivery time;
 - Start-up phase;
 - Product validation at the GVB location, whereby the new displays, outside a tram, are connected to a GVB switchboard. During this validation it must be possible to demonstrate (for each type of display) that all functional requirements and GIVA requirements are met;
 - Potential second product validation;
 - 1st Process validation (trial run) at GVB, where an entire tram is converted as a trial. The contractor must state how long the tram will have to be available and which facilities and personnel guidance is required of GVB;
 - 2nd Process validation: The conversion must be completed within the maximum prescribed time. The contractor must state how long the tram will have to be available and which facilities and personnel guidance is required of GVB;
 - The Contractor must prepare a discharging document including a sign-off form to be drawn up for each of the aforementioned sub-processes, on which GVB can grant the Contractor discharge for that separate process by means of a signature.
 - Series conversion
 - Schedule/planning per tram, outside rush hour in the afternoon or late evening and / or night. The tram must be able to re-enter the operation immediately afterwards with a fully installed and working configuration;
 - 5 trams per week based on 1 tram per day;
 - First 3 trams during the day, during the week, so that GVB ICT can assist with the configuration if necessary;
 - Dealing with deviations from planning and / or defects during installation / delivery;
 - Description of the discharging process to GVB after the work, including discharge document;
 - The contractor must state which facilities and personnel support are required of GVB. In addition, stop-and-go moments should be specified where a GVB delegate ticks off partial deliveries per tram (such as the correct installation of cables). Contractor is responsible for discharge forms per vehicle. Which must be provided after each vehicle has been converted to the project manager of GVB.

- Logistics: Description of how the equipment is delivered and handled. All hardware ownership is transferred from Contractor to GVB, per tram at the moment of discharge. Contractor must be self-sufficient with regard to stock management and delivery of goods from its own storage to the tram in the GVB depot. GVB cannot make storage space available / GVB can potentially make a small temporary storage space available during a day.
The disposal of removed hardware is the responsibility of Contractor. How this is taken care of must also be described. It must be demonstrated that disposal is done responsibly and in accordance with the laws and regulations.
- Escalation model; Contractor must show how deviations in the planning and / or how complaints made by GVB are dealt with (i.e. about the delivered quality or implementation processes). What guarantees of a quick response can the Contractor provide?
- Training GVB mechanics; Contractor must draw up a plan for training GVB personnel so that it can independently carry out replacements and repairs after the project. This should take into account the training of x technicians at x different locations;