Phase 2 Comprehensive Installation Plan (CIP)

Heart of Iowa Regional Transit Agency ITS4US Deployment Project

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ITS4US

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U.S. Department of Transportation

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16. Abstract

Heart of Iowa Regional Transit Agency (HIRTA) is one of four awardees for Phase 2 of the ITS4US program for its proposed concept ***"Health Connector: Bridging the Gap Between Healthcare and Transportation"*** (Health Connector) by the United States Department of Transportation (USDOT). Per the goals of the program, Health Connector project is focused on improving transportation access to healthcare for all groups in Dallas County, Iowa. This document serves as the Comprehensive Installation Plan (CIP) for HIRTA. The CIP describes an overview of installation processes and schedules for hardware components of Health Connector. Additionally, the CIP outlines inventory processes, configuration management, and procurement methods for components of the wayfinding subsystem.

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1 Introduction

This document serves as the Comprehensive Installation Plan (CIP) for The Heart of Iowa Regional Transit Agency (HIRTA) *"Health Connector: Bridging the Gap Between Healthcare and Transportation"* (Health Connector) solution for the United States Department of Transportation's (USDOT) ITS4US program. The CIP describes the installation process for Health Connector's mobility on demand solution, including the installation schedule, installation approach, inventory management, and configuration management. The CIP identifies relevant hardware components that will be procured as part of the wayfinding solution, as well as potential vendors and details surrounding those installation processes. Due to its position in the overall project schedule, this CIP intends to outline future installations and decisions.

1.1 Intended Audience

The intended audience for the CIP include HIRTA and its deployment partners, the USDOT and the USDOT representatives. HIRTA deployment partners include Arcadis IBI Group, Community Transportation Association of America (CTAA), Iowa State University (ISU), Dallas County Health Department (DCHD), Capture Management Solutions (CMS), NaviLens and Via. The CIP also serves as a document for future MOD implementors and equipment installation specialists.

1.2 Project Background

HIRTA was awarded a Phase 2 agreement of the ITS4US contract for its proposed concept *"Health Connector: Bridging the Gap Between Healthcare and Transportation"* (Health Connector) by the United States Department of Transportation (USDOT).

Health Connector is an innovative solution that will address various bottlenecks associated with transportation access to healthcare for HIRTA communities. Some of these challenges are key reasons behind missed appointments or the unacceptable level of preventive or as-needed healthcare in the HIRTA service area. For this deployment, the HIRTA team plans to implement a scalable and replicable solution that enables access to non-emergency medical transportation for all travelers by resolving transportation access barriers with the use of advanced technologies. This solution will allow Dallas County residents without access to transportation who may be seeking a medical appointment to explore their transportation alternatives and book both medical and transportation appointments at the same time through a smart device (e.g., smartphone) application or equally effective alternate method. Further, this solution will include information and wayfinding services to guide them at every step of their trip.

This deployment will provide enhanced access to healthcare options for all travelers in Dallas County with a specific focus on underserved communities rural travelers, older adults, and veterans. In addition to addressing mobility needs, the proposed deployment will recognize the net impact that access to health services has on patient healthcare outcomes as well as both the

financial and health outcomes from the perspective of the healthcare community/Dallas County Health Department (DCHD). Figure 1 provides an overview of the Health Connector concept.

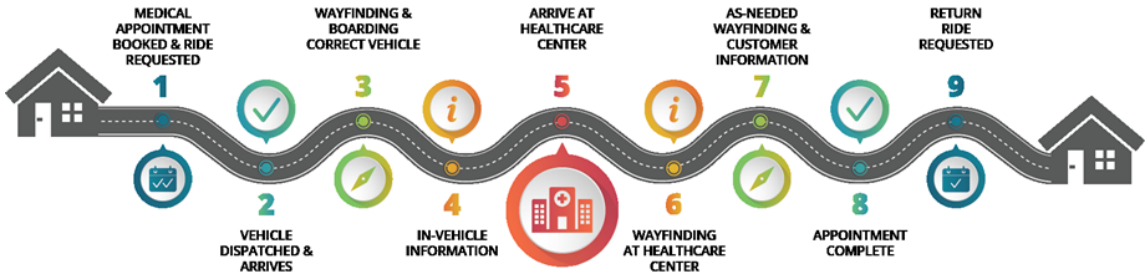


Figure 1. Overview of Health Connector (Source: HIRTA Team)

For more information about the key capabilities of the proposed Health Connector technology, refer to the Concept of Operations (ConOps) and System Requirements Specifications (SyRS) documents [1] [2].

Dallas County is one of the fastest growing counties in terms of population in the United States with an increase of 36.4% since 2010 focused largely on the southeastern portion of the county in the western Des Moines suburbs. In 2019, out of a total population of 93,000, the county was home to approximately 3,700 persons with disabilities, 11,200 older adults, 4,000 low-income individuals, 4,000 veterans, and 10,500 people speaking language other than English. Dallas County's aging population grew 12% from 2000 to 2010 and is expected to double by 2030. The overall growth represents a shift from an agricultural to suburban commuter community. Such challenges require HIRTA to use the available driver and vehicle resources in the most efficient manner.

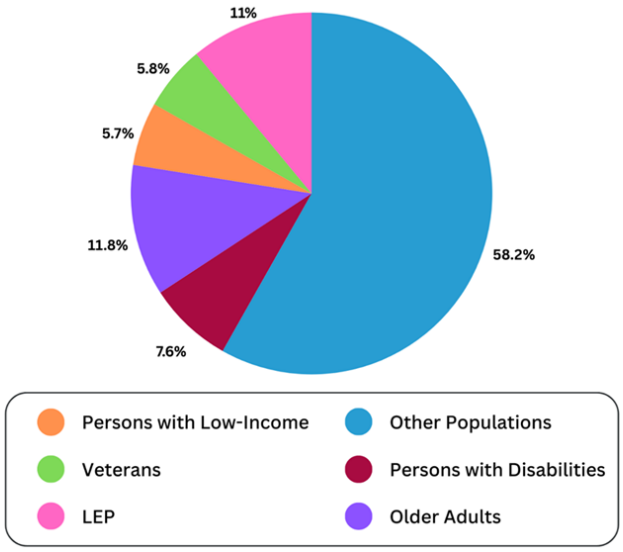


Figure 2. Dallas County, Iowa (Source: HIRTA Team)

Dallas County comprises 18 municipalities, with the largest being West Des Moines (population 66,641), and the smallest being Bouton (population 119). Portions of Dallas County are located in the Des Moines – West Des Moines Metropolitan Statistical Area and the county features a mixture of suburban and rural densities.

The change in population brings opportunity and access to healthcare services for many residents, but also exacerbates differences between the affluent eastern side of the county and the rural and other communities to the north and west. Older adults make up a larger portion of rural populations (17%) than urban populations (13%) and rural residents with disabilities rely on public transit and take about 50% more public transit trips than those who do not have disabilities.

1.3 Purpose of the Plan

The CIP serves to describe the proposed installation approach for Health Connector hardware components, including the acquisition approach as outlined in the Comprehensive Acquisition Plan (CAP), description of components, installation overviews, and inventory of hardware items [6]. While Health Connector consists of MOD platform software, middleware software, wayfinding software, and wayfinding hardware, the CIP provides an overview of hardware related to the wayfinding subsystem.

Technical descriptions and specifications found in this document are expanded upon in the System Design Document (SDD) [4]. The CIP also defines the relationship of wayfinding subsystem hardware components to system requirements (found in the SyRS) and describes the installation process for hardware [2]. Overall, the CIP describes the following elements:

- Acquisition overview and schedule
- Technical descriptions
- Procurement methods

- Equipment inventories
- Installation schedules
- Installation plans

2 Acquisition Overview

2.1 Acquisition Approach

The three primary components discussed in this document each have slightly different acquisition processes. The MOD platform is a COTS product that was acquired through an RFP process, whereas middleware products are being developed by a selected vendor (in this case, Arcadis IBI Group). The wayfinding subsystem will be acquired through a combination of contracting with a previously named vendor (NaviLens) and additional procurement through RedyRef for wayfinding kiosks. Additionally, HIRTA will install infotainment devices on HIRTA vehicles through Safe Fleet, to display relevant information about appointments and facilities. Both Arcadis IBI Group and NaviLens were selected during Phase 1 of the project.

HIRTA has acquired or is acquiring the different system components through four methods:

1. **Formal Procurement:** For components acquired through procurement, HIRTA used an RFP process, in which an RFP was posted on Bidnet and vendors responded with proposals. For the MOD Platform, HIRTA utilized their standard procurement method of placing an RFP on Bidnet and used their standard scoring method to select a vendor. This process was used to select the MOD vendor.

2. **Micro-purchase**: HIRTA utilizes micro-purchasing to procure hardware components below $50,000. For federal procurements, micro-purchases are capped at 10k, but HIRTA defines their threshold as 50k in line with the self-certification process outlined in the code of federal regulations described in section 200.320(a)(1)(iv). Any requirements as outlined in the self-certification process will be documented. Wayfinding kiosks and infotainment devices are to be acquired through micro-purchase.

3. **Contracting with a named vendor**: For wayfinding codes, HIRTA did not release a formal RFP, but rather partnered with NaviLens at the outset of the project with the understanding a licensing agreement would be established at a later date.

4. **Internal development:** Through discussions with Arcadis IBI Group, a named partner, HIRTA learned that the middleware products for Health Connector could be developed internally and budgeted accordingly at the outset of the project.

In keeping with guidelines for federal awards, HIRTA follows both informal and formal procurement methods. If the value of the procurement is below the “simplified acquisition threshold” (SAT), then HIRTA follows informal procurement methods for micro-purchases and small purchases. For procurements that exceed the SAT, HIRTA adheres to the following formal procurement methods:

1. Sealed bids: Sealed bids are a way in which bids are publicly solicited and a firm fixed-price contract (lump sum or unit price) is awarded to the responsible bidder whose bid,

conforming with all the material terms and conditions of the invitation for bids, is the lowest in price.

2. Proposals: Proposals are a procurement method in which either a fixed price or cost-reimbursement type contract is awarded. Proposals are generally used when conditions are not appropriate for the use of sealed bids.

Additionally, HIRTA takes all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. These include, but are not limited to:

1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;

3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;

5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and

6. Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in steps 1-5 in this section.

2.2 Acquisition Schedule

Table 1 shows the overall acquisition timeline for the various technologies and systems being obtained for Health Connector. As dates are refined or added, this section will be updated to reflect current knowledge.

Table 1. HIRTA Health Connector Acquisition Schedule

Event Title	Start Date	End Date
MOD Platform	August 3, 2022	March 31, 2023
Middleware	July 7, 2023	April 19, 2024
Wayfinding Components	June 26, 2023	May 6, 2024
Infotainment Devices	November 15, 2023	May 13, 2024

2.3 Vendor Outreach Plan

For procurements, HIRTA's vendor outreach plan includes posting RFPs to Bidnet and sharing an advance, pre-bid notice of RFPs with qualified providers via email. Bidnet is the standard procurement platform at HIRTA. On Bidnet, HIRTA is able to input contact information, closing dates, pricing details, National Institute of Governmental Purchasing (NIGP) categories, and other information about the RFP. On the site, HIRTA is also able to see suppliers who match at least a minimum number of the solicitation's categories and allows for notification via email. For the MOD platform procurement, HIRTA had knowledge of MOD vendors from previous RFPs, trade shows, and other research; from this list of MOD vendors, HIRTA sent a pre-bid notice, to which known vendors could register for Bidnet and see the RFP. All other outreach regarding MOD platform procurement was done through Bidnet.

For micropurchasing, contracting, and internal development, processes for vendor outreach are more informal. HIRTA agreed to bring Arcadis IBI Group and NaviLens onboard for provision of middleware components and wayfinding codes through mutual agreement prior to Phase 1. Other vendor outreach, such as for kiosks, is being done through internet research and by way of recommendations from colleagues.

3 Installation Overview

The installation overview provides a summary of all hardware to be installed as part of the Health Connector project. For all hardware, it outlines the relevant suppliers, acquisition methods, inventory and configuration management strategies, installation schedules and installation plans. Note that existing hardware (i.e., HIRTA phones, care facility computers, Traveler personal devices, etc.) being used for the project but neither newly acquired nor installed is not covered in this document. For more information on those devices, see the SDD [4].

Additionally, there are some software installations required for this project that are not included here either. These include installation of Traveler and Driver applications, MOD TMS software, wayfinding applications, and kiosk software. Note that these are all required for successful operation of Health Connector but are not germane to hardware installation efforts discussed herein. For more information on relevant software components and installation requirements, including details on versioning requirements and other specifications, please see the SDD.

3.1 Supplier Base

There are two main hardware components being acquired and installed as part of Health Connector, both relating to the wayfinding subsystem. These include unique wayfinding codes and a wayfinding kiosk. The vendor for wayfinding code software and the corresponding wayfinding applications is NaviLens. The printing of physical codes is being performed by Iowa Prison Industries' commercial printing services. The wayfinding kiosk vendor is Redyref.

3.2 Acquisition Method

HIRTA selected NaviLens by contracting with a named vendor. This method is further described in the Comprehensive Acquisition Plan (CAP) [6]. NaviLens was selected primarily due to having had previous experience with Arcadis IBI Group deploying wayfinding solutions. The wayfinding kiosks will be acquired through micro-purchase. HIRTA selected Redyref to be the wayfinding kiosk vendor after conducting research and consulting with industry peers on features and costs. Infotainment devices will also be acquired through micropurchase. The vendor selected for those devices is Safe Fleet. This vendor was selected after research and consultation with other current HIRTA vehicle hardware vendors.

3.3 Inventory Management

Inventory of all hardware will be maintained by HIRTA staff via spreadsheets that track the item, any identifying numbers or names for the item, its location, and any other relevant information for inventory. HIRTA will serve as the owner of this spreadsheet and coordinate with other facilities hosting hardware as needed to update inventory accordingly. If replacements are needed, this will also be tracked in the spreadsheet.

3.4 Configuration Management

Configuration management is handled by both HIRTA and Dallas County Hospital and carried out through software management systems where possible. For dynamic NaviLens codes with unique content behind them being installed on vehicles, information can be updated through a NaviLens portal at any time as deemed appropriate by HIRTA. Any changes will be made by the operations manager in coordination with the marketing coordinator and other key representatives at HIRTA. Changes that get made through the NaviLens content management system are pushed live instantly. At Dallas County Hospital, static codes will be utilized during the pilot period. The facilities manager at Dallas County Hospital will have authority to move, add, or remove codes as needed. In the event codes are altered, added, or removed, changes should be communicated to the HIRTA team as soon as possible so as to update inventories, other documentation, and communicate changes to Travelers as needed.

For all components, if HIRTA desires to change or enhance any component, a change management process will occur. The HIRTA team has established a change control board (CCB), comprising key members of the project team. The CCB controls any changes in the project direction. The same CCB will act in configuration management capacity and will approve or disapprove any changes in Phase 2. Configuration management approach based on Systems Engineering Management (SEM) also applies to source code management for the open-source middleware. Further details on this are provided in the SEMP. Additionally, there are three options for change to components: 1. system acceptance, where HIRTA accepts the system after requirements review, 2. Amendment, where HIRTA can request a change through a request of amendment to the existing scope, and 3. procurement through a separate RFP, in which the situation or change cannot be addressed in the existing contract.

Wayfinding kiosks will have their own configuration management system. If changes to the hardware need to be made, the facilities manager at Dallas County Hospital will have access to a key to unlock and retrieve the kiosk computer. They will also be able to make changes to the placement of the kiosk should they deem appropriate. Again, changes will be communicated to the HIRTA team in a timely manner for tracking and communication purposes. Changes to kiosk software can be made either by the kiosk vendor or, in the event that kiosk-compliant webpages for ride booking are developed by Arcadis IBI Group and presented on the kiosk, changes to the settings and configuration of those pages can be made remotely. Again, any such changes would be communicated with the HIRTA project team and DCH staff promptly. Should additional configuration policies need to be put in place, HIRTA reserves the right to implement those at any time.

Infotainment device configuration will be managed exclusively by HIRTA, with input from the Health Connector team as needed. This includes decisions regarding content to be uploaded or displayed on the devices as well as installation and mounting decisions onboard the vehicles.

3.5 High Level Equipment Inventory

This section provides a high-level summary of the hardware components that are being acquired and that will be installed at Dallas County Hospital and aboard vehicles. The total number of components that are configured and installed will be updated as Phase 2 progresses. This inventory includes both primary installation components and spare parts. For kiosks, one kiosk

will be installed and one computer component will be held as a spare. For wayfinding codes, ten will be installed at Dallas County Hospital, ten will be installed on vehicles, and five will be kept as spare in the initial phase. Note also that this list of codes includes both dynamic codes that are paid and licensed from NaviLens, as well as free codes available for download through the packs accessible on the NaviLens website. Table 2 provides an overview of the quantity of each component that is being acquired.

Table 2. Equipment Inventory

Equipment Type	Total # To Be Procured	Total # Configured & Installed as of 6/2024
Wayfinding Kiosk	2	1
NaviLens Codes	15	4
Free Codes	11	11
Infotainment Devices	10	1

3.6 Installation Schedule

Table 3. Installation Schedule outlines the anticipated schedule for installation of the codes, kiosk and infotainment devices. This is in line with the system testing schedule and occurs prior to installation testing. In the event either component can be installed before these dates, changes will be made to this table.

Table 3. Installation Schedule

Equipment Installation	Start Date	End Date
Wayfinding Kiosk	March 25, 2024	May 6, 2024
NaviLens Codes	March 25, 2024	May 6, 2024
Infotainment Devices	March 25, 2024	May 6, 2024
Middleware	April 19, 2024	April 19, 2024

3.7 Installation Plan

Hardware components are being installed in two places as part of the Phase 2/3 Health Connector project: Dallas County Hospital, and on HIRTA vehicles. The hospital will receive a kiosk and wayfinding codes. HIRTA vehicles will only receive wayfinding codes. Because of the relatively straightforward nature of installing these components, we do not anticipate any complex

tasks such as wiring or electrical interfacing. For kiosk network and communications, Health Connector will utilize wired connection via ethernet in Dallas County Hospital locations. Devices ill will be isolated into a separate VLAN behind a firewall.

All hardware requiring power will be plug-in, therefore extensive installation procedures are not required. No conduit will be run for electrical service, all electrical needs will be fulfilled through existing outlets and plugs. NaviLens codes will be installed using adhesive, no specific mounting is planned for codes. Codes also require no electrical or power infrastructure. Additionally, no installation, such as mounting, is applicable to wayfinding kiosks. Electrical needs for kiosks do not require extensive wiring, fiber optic splicing, or interconnects. Associated software for each component of Health Connector is outlined in the System Architecture Document [3].

4 Wayfinding Codes

This section outlines in more detail information about NaviLens wayfinding codes, their installation instructions, and other relevant procedures and processes related to the hardware.

4.1 Description and Installation Information

Wayfinding codes, similar to QR codes, are physical codes that can be scanned to provide Travelers with guidance and directions to and from vehicles as well as within facilities via visual and/or audio references. These codes can also be scanned to provide translation services or other information pertinent to care facility processes. Codes, however, are not public QR codes and have no availability to automatically report problems or re-location in case of being tampered or vandalized. NaviLens and NaviLens GO are the associated applications used by Travelers for scanning these codes. The NaviLens app relays wayfinding and navigation information auditorily only. NaviLens GO on the other hand can provide visual navigation, translation, trip planning information, and status of trip information to help user navigate care facilities and to board vehicles. Locations where NaviLens codes are planned for installation include:

- **HIRTA Vehicles** (dynamic licensed codes)
  - Affixed to the outside of the vehicle, near the boarding door
- **Dallas County Hospital** (free codes)
  - Entrance Door
  - Men's Bathroom
  - Women's Bathroom
  - All Gender Bathroom
  - Family Medicine (2)
  - Reception (2)
  - Waiting Room (3)

4.1.1 Installation Information

4.1.1.1 Suppliers

HIRTA selected NaviLens to supply wayfinding codes. NaviLens provides technology designed to improve navigation and accessibility for a person who is blind or low-vision. Through distinctive symbols, it enables users to interpret their surroundings using smartphone cameras and apps. This approach offers a practical solution for people who are blind or have low-vision, promoting independent navigation with the Health Connector system. NaviLens, however, only supplies the backend software which the codes are tied to. The supplier for printing the physical codes to be installed in the hospitals and vehicles is Iowa Prison Industries.

4.1.1.2 Inventory Control Method

NaviLens code inventory will be tracked using an Excel sheet managed by HIRTA. The sheet will outline an identifier for the physical code, the location it was installed, and information on spare codes.

4.1.1.3 Configuration

Configuration management is handled by both HIRTA and Dallas County Hospital and carried out through the NaviLens content management software (CMS) when possible. For dynamic NaviLens codes with unique content tied to them, each code has a specific listing in the CMS that can be edited. Information can be updated through a NaviLens portal at any time as deemed appropriate by HIRTA. Any changes will be made by the operations manager in coordination with the marketing coordinator and other key representatives at HIRTA. Changes that get made through the NaviLens content management system are pushed live instantly. At Dallas County Hospital, static codes will be utilized during the pilot period. The facilities manager at Dallas County Hospital will have authority to move, add, or remove codes as needed. In the event codes are altered, added, or removed, changes should be communicated to the HIRTA team as soon as possible so as to updated inventories, other documentation, and communicate changes to Travelers as needed. Should additional configuration policies need to be put in place, HIRTA reserves the right to implement those at any time. Any changes are subject to approval by the CCB and should follow the process outlined in section 3.4 regarding change control processes as well.

4.1.1.4 Installation Diagram

Physical NaviLens codes will be installed on select HIRTA Health Connector vehicles serving Dallas County. Codes at DCH locations will be installed by the Facilities Manager at DCH. Codes on HIRTA Vehicles will be installed by the Mobility Outreach Coordinator.

Figure 3 shows a mock-up of NaviLens Codes on HIRTA vehicles.

Figure 3. NaviLens Codes on HIRTA Vehicles (Source: HIRTA Team)

4.1.1.5 Installation Procedures

On HIRTA vehicles, codes will be installed via adhesive in selected locations. HIRTA operations staff will coordinate internally to determine exact appropriate placement on each vehicle, but these should be placed on the boarding door(s).

For wayfinding codes at Dallas County Hospital, the facilities manager will be responsible for installation and maintenance of the codes. Sizes of each of these codes will be 297mm square. Various options for placement and mounting typologies are outlined in Figure 4 below.

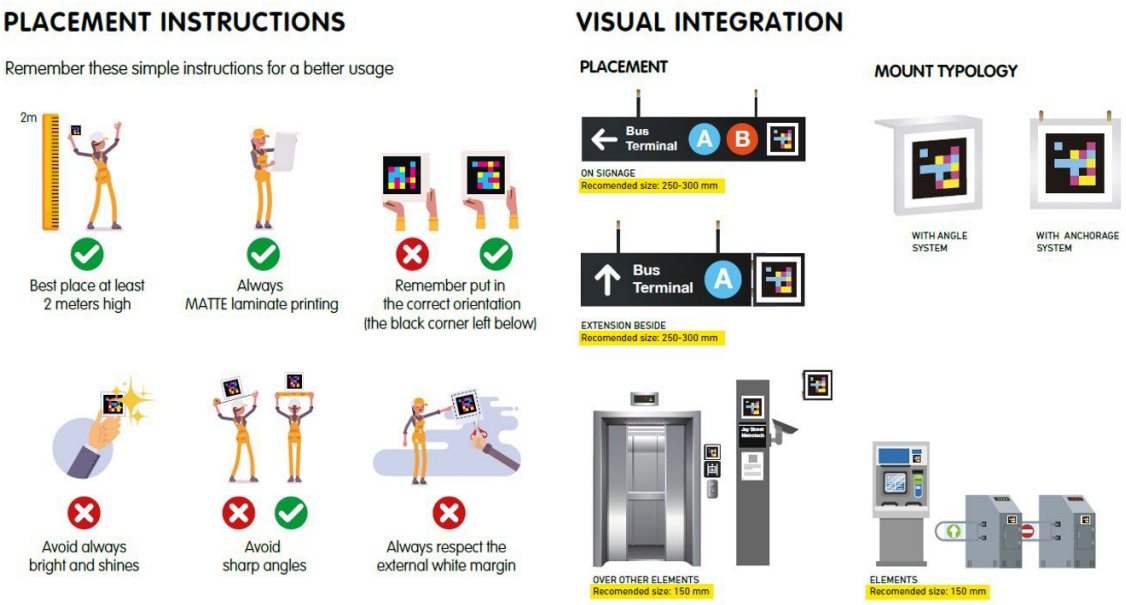


Figure 4. NaviLens Code Placement Instructions and Visual Integration Instructions (Source: NaviLens)

4.1.1.6 Quality Assurance and Quality Control Processes

The vendor of wayfinding code software, NaviLens, will be responsible for verifying that the software is functional and acts as intended to with use of physical codes. Procedures outlining software testing are outlined in the System Test Plan (STP) and Requirements Matrix [7] [2]. Test procedures for wayfinding codes will address quality assurance/ quality control (QAQC) for wayfinding code installation and operations.

4.1.1.7 High-level Installation Schedule

Table 4 shows the high-level installation schedule for NaviLens codes.

Table 4. NaviLens Code Installation Schedule

Equipment Installation	Start Date	End Date
Wayfinding Codes – HIRTA Vehicles	March 25, 2024	March 29, 2024
Wayfinding Codes – Dallas County Hospital	March 25, 2024	May 6, 2024

4.1.1.8 Spare Parts/Warranty Contingency Plan

HIRTA will work with Iowa Prison Industries to create replacement codes in the case of damaged existing codes. Typical lead time for reprinting of codes is 1-2 weeks. The quantity of spare codes will be 20% of the quantity both the unique paid codes and the free codes, which can be replaced and configured. Codes at DCH locations will be replaced and managed by the Facilities Manager at DCH. Codes on HIRTA Vehicles will be replaced and managed by the Mobility Outreach Coordinator.

5 Wayfinding Kiosk

5.1 Description and Installation Information

The HIRTA team is currently in the process of purchasing one kiosk for installation at Dallas County Hospital from Redyref. One additional kiosk computer from Redyref will be acquired as a spare and stored with the vendor as a backup. The kiosk is a component of the Health Connector wayfinding subsystem.

While a number of use cases have been explored for the kiosk, the HIRTA team determined the most useful scenario for the kiosk would be to assist Travelers in booking return trips from the hospital. This would be particularly critical for supporting the complete trip for travelers who may not have a personal device with them to make ride requests.

5.1.1 Installation Information

5.1.1.1 Suppliers

HIRTA selected Redyref to supply wayfinding kiosks. Redyref will supply the one wayfinding kiosk and one spare monitor as part of Health Connector kiosk deployment.

5.1.1.2 Inventory Control Method

Kiosk inventory will be tracked using an Excel sheet managed by HIRTA. The sheet will outline any unique identifiers for kiosk components, the location it was installed, and information on spare parts.

5.1.1.3 Configuration

Configuration changes for kiosk hardware can be made at the discretion of the facilities manager at Dallas County Hospital. The facilities manager will have access to a key to unlock and retrieve the kiosk computer if needed. They will also be able to make changes to the placement of the kiosk should they deem appropriate. Changes will be communicated to the HIRTA team in a timely manner for tracking and communication purposes. Changes to kiosk software can be made either by the kiosk vendor or, in the event that kiosk-compliant webpages for ride booking are developed by Arcadis IBI Group and presented on the kiosk, changes to the settings and configuration of those pages can be made remotely. Dallas County Hospital will also have administrative privileges should any modifications be needed on site. Again, any such changes would be communicated with the HIRTA project team promptly. Should additional configuration policies need to be put in place, HIRTA reserves the right to implement those at any time. Any changes are subject to approval by the CCB and should follow the process outlined in section 3.4 regarding change control processes as well.

Table 5. Wayfinding Kiosk Specifications

Description	Detail
Model Name	T-Flex
Model Number	TFLEX
Construction	High Grade Steel Construction
Active Display Area	22” – Landscape Orientation
Native Resolution	1920 x 1080
Power Requirements	120V – 15 Amp Circuit
Weight	45.5 – 86.4 lbs.
Warranty	1 Year
Included Components	22” Display (Windows OS, 4GB RAM, 250 SSD)
Environment	Indoor Rated

5.1.1.4 Installation Diagram

An installation diagram outlining placement of the kiosk was not available upon request from the vendor. If one becomes available it will be shared alongside this document in an appendix. Installation for this device will, however, be straightforward. No mounting is expected, but placement of the device will be done in accordance with ADA guidelines; for example, the screen will be placed at wheelchair accessible height. Figure 5 provides an overview of the dimensions of the wayfinding kiosk. Figure 6 shows a picture of a similar kiosk provided by this vendor, though for Health Connector the kiosk will be landscape orientation.

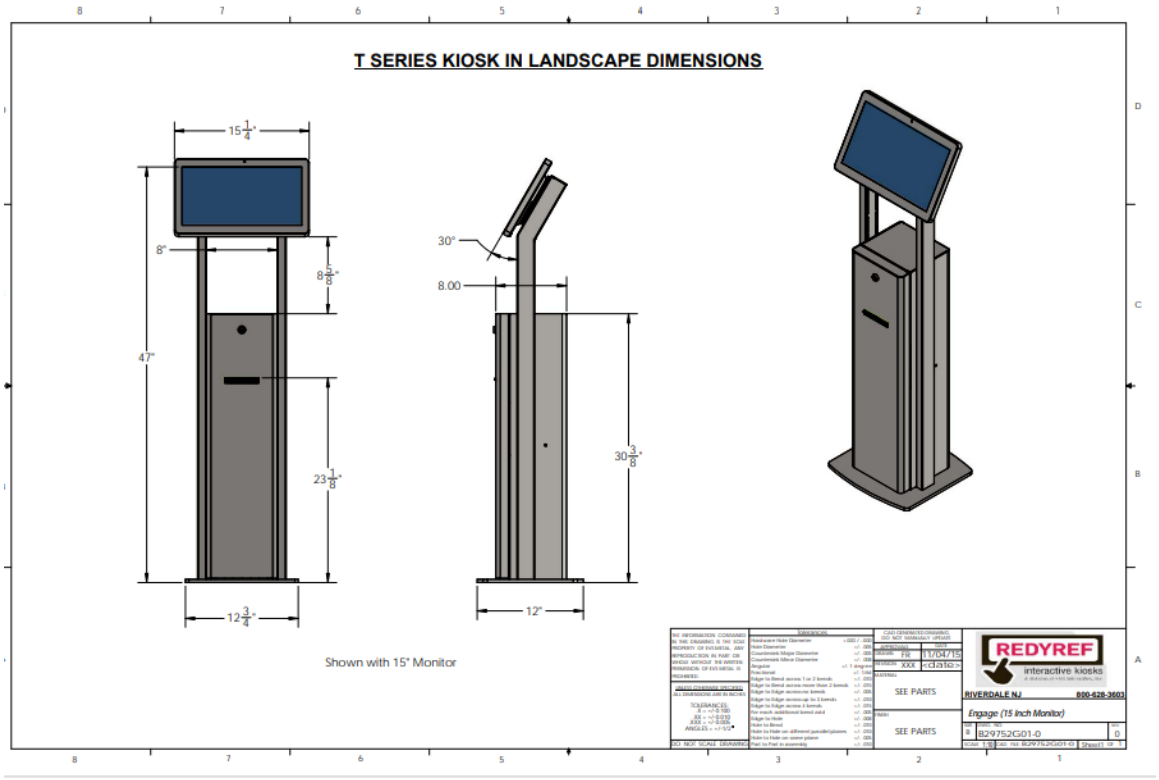


Figure 5. Wayfinding Kiosk Dimensional Drawings (Source: RedyRef)

Figure 6. Wayfinding Kiosk Dimensional Drawings (Source: RedyRef)

5.1.1.5 Installation Procedures

This device is to be installed in the main vestibule of Dallas County Hospital near the check-in desk and entrance. No wiring or complex electrical integration will be needed for this kiosk. The kiosk will need access to a power source (120V – 15 Amp Circuit) and will use an ethernet connection. Table 5 provides details on all kiosk installation information that could be collected from the vendor, including power requirement and parts.

5.1.1.6 Quality Assurance and Quality Control Processes

The kiosk vendor will be responsible for verifying that the hardware is functional and acts as intended. Booking webpages will integrate with the MOD platform provider (Via) but will be developed and maintained by Arcadis IBI Group. Procedures outlining hardware and software testing are outlined in the System Test Plan and Requirements Matrix [7] [2]. Test procedures for wayfinding kiosks will address QAQC for ongoing operations.

5.1.1.7 High-level Installation Schedule

Table 6 shows the high-level installation schedule for the kiosk.

Table 6. Kiosk Installation Schedule

Equipment Installation	Start Date	End Date
Wayfinding Kiosk Delivery and Installation	March 25, 2024	May 6, 2024

5.1.1.8 Spare Parts/Warranty Contingency Plan

Health Connector has opted for a 2-year Gold Level Support Plan provided by RedyRef. This plan includes expedited 48-hour shipping of replacement materials during regular business hours (9 A.M. to 5 P.M., Monday through Friday), a comprehensive set of backup components stored at the RedyRef depot for advanced replacement, and three annual on-site service visits by RedyRef technicians to assist with installation and servicing. Furthermore, there is a limited warranty for the associated software, guaranteeing that it will meet the requirements outlined in the design documents for a period of thirty days following system acceptance. It's important to note that any alterations made to custom associated software or third-party software during the warranty period will not be covered under RedyRef's warranty. Also, RedyRef will be responsible for patches and updates to the computer but DCH will also have administrative privileges. Configuration to be tracked and managed by RedyRef.

In addition to the support plan and software warranty, all RedyRef-manufactured products come with a limited 1-year warranty. This limited warranty covers defects in materials and workmanship in RedyRef products. The warranty period offered by the vendor begins at date of shipment but does not include coverage of damage that may occur in transit if the Customer signs for the damaged shipment at delivery. This limited warranty covers:

• Unlimited remote troubleshooting of hardware defects;

• Repair and replacement of malfunctioning equipment due to manufacturer defects;

• Repair/replacement based on Customer shipment of faulty equipment to RedyRef and RedyRef return of repaired/replaced equipment to Customer (shipment via ground service);

• Billable onsite support, if necessary.

6 Infotainment Devices

6.1 Description and Installation Information

The HIRTA team has purchased one infotainment system for installation on HIRTA vehicles from Safe Fleet. Infotainment devices are a component of the Health Connector MOD Platform Traveler subsystem.

While a number of use cases have been explored for the infotainment devices, screens will be used to display relevant information about appointments and facilities. Further detail on screens and system design can be found in the Systems Design Document [4]. For initial configuration, additional coordination with HIRTA will be required to determine content and parameters prior to installation.

6.1.1 Installation Information

6.1.1.1 Suppliers

HIRTA selected Safe Fleet to supply the first infotainment device. Additional infotainment device components outlined below may be purchased directly by HIRTA for future installations. Table 7 shows hardware components included as part of infotainment devices.

Table 7. Infotainment Device Components

Product Number	Description
MVQ-DS215-KIT-3Y	LCD Monitor Kit - Includes 21.5” LCD monitor with 3-year warranty, Pre-inserted protective glass cover, wall-mounting bracket, 5’ VGA cable and 5’ HDMI cable.
HDMI-AM-AM-15-CP-G	15' HDMI Male-to-Male Cable - for use with Infotainment Products that support HDMI
MP-1144-EXW-3Y	Media Player for Infotainment, explicitly extends warranty to 3 years. Includes pre-inserted 32GB Micro SD card, voltage regulator / conditioner, power harness cable with fuse and fuse holder and single 6-pin GPIO terminal block connector.
VDU-HDMI-1-4-1	HDMI Video Distribution Unit (Splitter), 1 input, 4 outputs -Includes mounting plate, voltage conditioner and 3 ft HDMI cable HDMI Splitter

Product Number	Description
SDCARD64	64GB SD Card for use with compatible recorders
SRC-ROUTER-2	CRADLEPOINT IBR900 LTE,2.4/5GHZ WIFI, GPS, Roof Antenna and extension cables included.
MSS-4030-03-01-ETH	ETHERNET CABLE, STANDARD 3FT, CAT5

6.1.1.2 Inventory Control Method

Infotainment device inventory will be tracked using an Excel sheet managed by HIRTA. The sheet will outline any unique identifiers for device components, the vehicle it was installed on, and information on spare parts.

6.1.1.3 Configuration

Configuration changes for infotainment devices will be made at the discretion of the facilities and maintenance staff at HIRTA. Infotainment devices will not be directly connected to the vehicle's CAN bus or will they directly network to intermediate devices with access to CAN bus. HIRTA will also be able to make changes to the placement of the devices should they deem appropriate. Changes will be communicated to the team in a timely manner for tracking and communication purposes. Configuration and change related matters will be handled by the Mobility Coordinator at HIRTA, but changes will be discussed and approved by the Change Control Board, as established in the Project Management Plan [8]. Should additional configuration policies need to be put in place, HIRTA reserves the right to implement those at any time.

6.1.1.4 Installation Diagram

Infotainment Devices will be installed behind the driver's seat as seen below.

Figure 7. Infotainment Screen Installation Location onboard HIRTA Vehicles (Source: Safe Fleet)

6.1.1.5 Installation Procedures

Installation procedures for these devices can be found in Appendix B.

6.1.1.6 Quality Assurance and Quality Control Processes

The device vendor will be responsible for verifying that the hardware is functional and acts as intended to with use of physical codes. Physical NaviLens codes will be able to be presented on infotainment device screens for translations of any information presented. Procedures outlining hardware and software testing are outlined in the System Test Plan and Requirements Matrix [7] [2]. Test procedures for wayfinding kiosks will address QAQC for ongoing operations.

6.1.1.7 High-level Installation Schedule

Table 6 shows the high-level installation schedule for infotainment devices.

Table 8. Infotainment Device Installation Schedule

Equipment Installation	Start Date	End Date
Infotainment Device Installation/ Installation Testing	March 25, 2024	May 3, 2024

6.1.1.8 Spare Parts/Warranty Contingency Plan

The HIRTA team plans to acquire 10 infotainment devices which will include several spare. Just two vehicles will be used for Health Connector Operations in Phase 2 revenue testing and initial deployment. As additional vehicles are brought online, additional devices can be installed as needed.

7 Middleware

7.1 Description and Installation Information

In addition to the hardware components described above, there are two middleware applications that will require software installation. While this document mainly pertains to hardware components, the HIRTA team identified middleware installation procedures as a critical element to be documented because it may be somewhat less straightforward than installation procedures for commercial off the shelf products such as the Via app or the NaviLens app. This section intends to document how installations can take place using Amazon Web Services (AWS) and where further instructions may be added or edited in the future.

7.1.1 Installation Information

7.1.1.1 Suppliers

Arcadis IBI Group the developer and 'supplier' of both the MOD-Medicaid middleware product as well as the MOD-EHR middleware product. Neither product will require any hardware to support its operation.

7.1.1.2 Inventory Control Method

Inventory should not change for these components.

7.1.1.3 Configuration

Arcadis IBI Group will serve as the developer and is equipped to make any changes to the configuration of the middleware products as needed throughout the project. Arcadis IBI will also maintain a list of any configuration changes that are made so as to document versions of the middleware as needed. Any changes will be discussed and approved by the Change Control Board, as established in the Project Management Plan [8]. Should additional configuration policies need to be put in place, HIRTA reserves the right to implement those at any time.

7.1.1.4 Installation Procedures

Middleware products can be installed either in an Amazon Web Services (AWS) environment or outside of one. For both AWS and Non-AWS installations of the middleware products, care must be taken given that secret keys and private keys are well protected. At a minimum:

- For the MOD-EHR middleware, an administrator is required to generate their own public/private key and share the public key with any EHR system
    - Epic requires users to load a public key in its application management portal
    - Veridigm requires a JWKS to access the public key and the appropriate URL submitted to its application management portal

- For the MOD-EHR middleware, a user needs to sign a JSON Web Token (JWT) with the user's private key
- For the MOD-Medicaid middleware, connecting to either the MOD Platform TMS or the Medicaid provider requires sharing secret keys using OAuth2 standards

7.1.1.4.1 Non-AWS installation

The following libraries are required to install the middleware applications without using AWS:

- Flask
- Flask-OAuth
- SQLAlchemy
- Waitress (suggested)

All of the sub dependencies for these libraries are also required. 'Requirements_flask.txt' provides an easy way for an installer to quickly install all required python libraries.

The entry point for the Flask application is in the root directory in the filename flask_app.py. Flask should not be directly invoked; rather a production WSGI Web Server should be utilized. Waitress is listed as an option for a production WSGI Web Server. To run the program in Waitress, issue the following command at the root of the codebase:

waitress-serve flask_app:app

Critically, the operator of this instance needs to ensure that all cybersecurity measures are taken, such as:

- proper authentication for the Medicaid broker via the TAPI API and OAuth2
- proper storage of private keys to authenticate against various EHR using FHIR
- protecting the python application execution using a reverse proxy such as Apache, Nginx, or IIS
- protecting files against unauthorized writes from webserver users
- not executing the web server as root or with any elevated permissions

Note that python expects to read/write into one file: mod_db_v1.db. Modifications could be made to the code to use an existing database. SQLAlchemy supports common databases such as:

- Microsoft SQL Server
- Oracle
- Postgres

The middleware uses SQLite, which is performant for the purpose of this project and with a sizable participant size.

7.1.1.4.2 AWS Installation

Using the included AWS Cloud Development Kit (CDK) framework, please refer to AWS CDK for the latest instructions. These middleware products were built using the AWS CDK v2. The following resources are required to proceed with installation:

- AWS Account
- AWS CDK CLI and authentication setup on the machine to execute the AWS CDK commands

Please refer to AWS documentation for the latest information on how to setup your computer to interact with your AWS Account.

To build the AWS environment, navigate to your code directory and execute:

cdk synth

cdk deploy app

7.1.1.5 Quality Assurance and Quality Control Processes

Middleware products will also be tested as outlined in the System Test Plan [7] to ensure use cases can be achieved prior to the operational readiness demonstration and that all middleware requirements as described in the SDD can be satisfied.

7.1.1.6 High-level Installation Schedule

Table 6 shows the high-level installation schedule for middleware products on relevant HIRTA computers and other devices that need to be equipped with this software as part of Health Connector. Note that further installations can be made at any time once development is complete, as software installation is not labor intensive.

Table 9. Middleware Installation Schedule

Equipment Installation	Start Date	End Date
Middleware Installation on Various Devices	April 19, 2024	April 19, 2024

7.1.1.7 Spare Parts/Warranty Contingency Plan

No spare parts have been identified for the middleware products. In the event Arcadis IBI Group can no longer maintain access to the GitHub site that contains open-source code or instructions for using the middleware, access of the page will be transferred to HIRTA.

8 References

[1] Concept of Operations (FHWA-JPO-21-859) https://rosap.ntl.bts.gov/view/dot/57469

[2] Systems Requirements Specifications (SyRS) Document (FHWA-JPO-21-882) https://rosap.ntl.bts.gov/view/dot/61724

[3] System Architecture Document (FHWA-JPO-22-983)

[4] Systems Design Document, to be published

[5] MOD Platform Compliance Matrix

[6] Comprehensive Acquisition Plan

[7] System Test Plan

[8] Project Management Plan

Appendix A Definitions, Acronyms, and Abbreviations

Term	Description
AR	Augmented Reality
CAP	Comprehensive Acquisition Plan
CIP	Comprehensive Installation Plan
CMS	Capture Management Solutions
ConOps	Concept of Operations
COTS	Commercial Off-the-shelf
CMS	Content Management Software
CTAA	Community Transportation Association of America
DCHD	Dallas County Health Department
EHR	Electronic Health Record
HIRTA	Heart of Iowa Regional Transit Agency
ISU	Iowa State University
IVR	Interactive Voice Response
MDT	Mobile Data Terminal
MOD	Mobility On Demand
RFP	Request for Proposal
SA	System Architecture Document
SAT	Simplified Acquisition Threshold
SDD	System Design Document
SDD	System Design Document
STP	System Test Plan
SyRS	System Requirements Specifications
TMS	Transportation Management System
USDOT	United States Department of Transportation
QAQC	Quality Assurance/ Quality Control

Appendix B Installation Instructions for Infotainment Devices

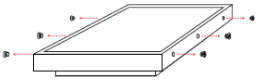
Routine Maintenance

Cleaning protective screen cover

1. Create a mixture of equal amounts of dish soap and water.
2. Pour the mixture into a spray bottle and seal it shut.
3. Mix the contents together by shaking the bottle.
4. Spray the mixture on the cover and wait 10 minutes.
5. Wipe the cover clean with a soft sponge (do not use a scouring pad or other abrasive materials).
6. Buff the glass dry using a clean, soft cloth. A microfiber cloth is acceptable.

Replacing protective screen cover

1. Remove the monitor from the wall. To do so, remove the two retaining screws on the sides of the mounting bracket assembly and carefully lift the monitor. Then lay it down on a flat surface with the screen facing up.
2. Remove the six screws from top and bottom of the monitor enclosure using a Phillips screwdriver.



3. Lift the monitor's top bezel with the attached glass cover, and then, minding the connected light sensor cable, lay it down next to the monitor.
4. Detach the light sensor cable connector by pulling it gently out of its socket, and then move the bezel out of the way.
5. Connect the light sensor cable to the socket on the replacement bezel.
6. Set the replacement bezel in place and secure it with the removed screws. Do not overtighten the screws.

Specifications

Feature	Specification
Resolution	1920 x 1080
Viewable area	18.74" x 10.54" (476.064mm x 267.786mm)
Pixel pitch	247.95µm (per one triad) ×247.95µm
Display colors	16.7M
Aspect ratio	16:9
Brightness	350 cd/m² *
Contrast ratio	1000:1
Viewing angle	178°(H) x 178°(V)
Response time	10 ms Trf
Control	OSD via rear panel push buttons
Lockable rear panel buttons	Yes
Auto-restart after power loss	Yes (monitor returns to its last state when power is restored)
Video connectors	HDMI, VGA, Composite NTSC/PAL (Loop-Through, 2 pairs)
Power requirement	9 - 36 V DC
Power consumption	21 W (max)
Enclosure	Painted steel
IP rating	IP65 (front) / IP41 (rear)
Impact rating	IK07
Mounting	100 x 100 Rear VESA mount holes
Operating temperature	+32°F to +122°F (0 to 50°C)
Storage temperature	-4°F to +140°F (-20°C to +60°C)
Humidity	≤ 90%
Dimensions	20.3"(W)x12.6"(H)x1.8"(D) (516 x 320 x 45.6 mm)
Weight	11.89 lbs (5.4 kg)

* not factoring in the effect of protective glass cover

Service

If your 21.5" Public Display Monitor is to be returned for service, please contact the Seon technical support team, provide the model and/or serial# of your unit, and ask for a **Return Merchandise Authorization (RMA)** number. An RMA# allows the support team to better track your product when it comes in for service. Please show the RMA# on the outside of the package.

ANY PRODUCT SENT WITHOUT AN RMA# MAY BE REFUSED!

Technical Support

- Email: service@seon.com
- Phone: 1.844.899.7366

Documentation

Additional copies of this guide, along with other supporting documentation can be found on the SafeFleet Community (https://community.seon.com/documents/)

21.5" Public Display Monitor

Quick Installation and Configuration Guide

Product Overview

This guide covers installation and maintenance of the 21.5" Public Display Monitor, an industrial-grade color LCD designed for use in transit vehicles.
Full details are provided for connection to an HDMI source. The monitor also supports a VGA source and two pairs of looping NTSC/PAL composite sources.

Package Contents

Component	Part number
LCD monitor with preinserted glass cover	080-1084
Power harness kit:	020-1060

- Power cable with an in-line fuse holder and preinserted axial leaded miniature glass tube 4 A
- 250 V fuse
- Two butt splice connectors
- Four M4x6 black screws for use with VESA mounting plate
- Four 4-40x6 round head silver screws (2 for use with HDMI lock and 2 spares)
- HDMI cable – 5 ft./1.5 m
- VGA cable – 5 ft/1.5 m
- Trigger wire used to automate switching between video sources – 19.5 ft/6 m

Installation Requirements

Environment	Keep monitor away from heat sources, extreme cold, and humidity. Avoid direct sunlight, dust, and equipment that generates magnetic fields.
Ventilation	Do not install in an enclosure, unless proper ventilation is provided. Do not block slots and openings in the cabinet.
Power cable	Route to ensure nothing potentially damaging comes in contact with the cable. Refrain from creating small-radius cable coils.

Installation Diagram

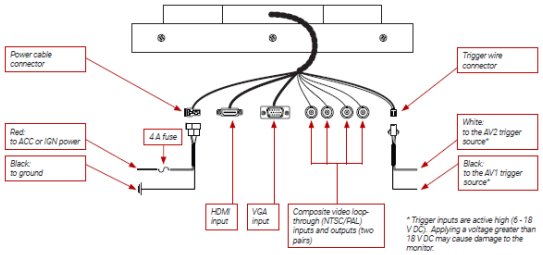


Figure 8. Installation and Configuration Guide for 21.5" Public Display Monitor (Source: Safe Fleet)

Installation and Configuration

1. Install the mounting bracket's VESA plate and wall plate. For detailed instructions, refer to the **MVQ-V75V100-MTPLT Mounting Bracket Installation Guide**.
2. Run the power cable to source, and then use the supplied butt splice connectors to connect wires as follows:
   - Red wire to vehicle's ACC or IGN power. WARNING: Do not connect directly to battery power.
   - Black wire to ground.
3. Run the video cables to sources.
4. Connect the power and video cables to appropriate monitor pigtail connectors.
5. Secure the HDMI cable connector to the HDMI input's preinstalled lock using two of the supplied silver screws.
6. Turn on the monitor by pressing the power button ⏻ on the back panel. The power indicator LED illuminates and stays solid while the monitor is powered up. See the ***Monitor Controls*** section for LED colors explanation.
7. Press the **Source** button to display the input source menu, cycle through the menu options by pressing the Source button until the desired option is highlighted, and then press either the **+** or **-** button to select it.
8. Access the on-screen display (OSD) configuration menu by pressing the **Menu** button.
9. Review the ***OSD Menu Overview, Monitor Controls*** and ***OSD Menu Options*** sections that follow for explanation of available options, and then proceed with selecting your settings.

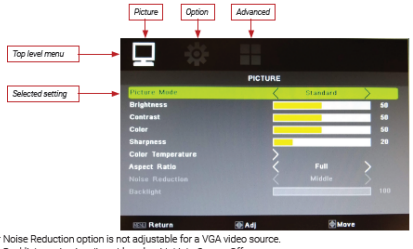
> **NOTE: Complete configuration before mounting**
>
> To deter tampering, control buttons are located on the back panel, and are not easily accessible once the monitor is mounted. Therefore, check the image and perform the required configuration prior to mounting.

10. Once you have finished selecting the settings, wait for the monitor to go into stand-by mode, and then press the **Menu** button for 3 seconds or longer to activate the key lock mode which locks the control buttons. See the ***OSD Menu Options*** section for explanation of the stand-by mode.

> **NOTE: Disabling key lock**
>
> Key lock is intended to prevent tampering and will stay active until disabled. To unlock the control buttons, with the monitor in stand-by mode, press the **Menu** button for 3 seconds or longer again.

11. Mount the monitor to the wall. For detailed instructions, refer to the **MVQ-V75V100-MTPLT Mounting Bracket Installation Guide**.

OSD Menu Overview



† Noise Reduction option is not adjustable for a VGA video source.
‡ Backlight option is adjustable only with Light Sensor Off.

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Monitor Controls

Control	Description
Source	• Cycle through video source input options: VGA, HDMI, AV1, AV2. • In menus: navigate up and down through menu items.
Menu	• Open or close the menu. • With a setting selected: close the setting and re-display the menu.
Plus	• In menus: navigate to the next menu option. • With a setting selected: increase its value.
Minus	• In menus: navigate to the previous menu option. • With a setting selected: decrease its value.
Power	• Toggle the monitor power on or off. • The power indicator LED illuminates red when the monitor is powered up, and blue when an active video source is connected.

OSD Menu Options

Menu Item/Setting	Description	Values or Options	Additional options	
			Setting	Values
Picture				
Picture Mode	Picture preset.	User/Dynamic/Standard/Mild	Brightness Contrast Color Sharpness	0-100 0-100 0-100 0-100
Color Temperature	Color profile: Cool is more bluish, while Warm tends toward yellow.	User/Warm/Medium/Cool	Red Green Blue	0-255 0-255 0-255
Aspect Ratio	Ratio of the on-screen image width to the image height.	Full/4:3		
Noise Reduction†	Reduction of artifacts that degrade image quality.	Default/High/Middle/Low/Off		
Backlight‡	Amount of light output.	0-100		
Option				
OSD Language	Interface language.	English/Francais/Deutsch/Espanol/Italiano/ Nederlands/Polski/ Русский/ 中文		
OSD H Pos	Horizontal OSD menu position.	0 (leftmost) -100 (rightmost)		
OSD V Pos	Vertical OSD menu position.	0 (topmost) -100 (bottommost)		
OSD Timeout	Time OSD menu remains displayed.	3-60 (seconds)		
OSD Transparency	Transparency of OSD menu panel.	High/Middle/Low/Off		
Restore Factory Default	Default settings restored.	N/A		
Mirror H	OSD menu flipped horizontally.	N/A		
Mirror V	OSD menu flipped vertically.	N/A		
Light Sensor	Effect of ambient lighting on monitor brightness.	On/Off		
Stand-by Time	Time monitor remains powered up when there are no video signals present.	30 sec/1 min/5 min/Off		
Advanced (HDMI)				
H-Start	Horizontal starting position of the display area. Top left corner is 0.	-100/+100		
H-Size	Horizontal position of image.	-100/+100		
V-Start	Vertical starting position of the display area. Top left corner is 0.	-100/+100		
V-Size	Vertical position of image.	-100/+100		
Advanced (VGA)				
Auto Adjust	Automatically adjust image quality.	N/A		
Horizontal Pos.	Horizontal position of image.	0-100		
Vertical Pos.	Vertical position of image.	0-100		
Clock	Minimize visible vertical stripes.	0-100		
Phase	Minimize video distortion/jitter.	0-100		

Figure 9. Installation and Configuration Guide and On-Screen Display Menu Options (Source: Safe Fleet)

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