Display Solutions

Eclipse System
3 Line LED and TFT Displays
Digital Display Systems
Internal Digital Displays
Quattro System
Cloud Amber is a highly innovative company developing and delivering creative products to the transport sector tailored to both the requirements of operational transport managers as well as the travelling public. Traditionally, the movement of people and goods has been divided into two distinct spheres with their own monitoring and control systems: Public Transport and Traffic, to bridge this divide, Cloud Amber has designed products to provide a holistic view of the transport network.

For the last ten years, Cloud Amber has been delivering a new generation of strategic highway control solutions that brings together the key information for traffic managers to enable real-time decisions to be made on road networks - as a result, Cloud Amber is now a leading provider of systems in the UK market.

Cloud Amber is delivering this thinking into the Real Time Passenger Information market place with the next generation of bus tracking and fleet management solutions. Cloud Amber's approach is to provide traditional Real Time Passenger Information functionality and where possible to integrate with current traffic conditions, providing enhanced intelligence for operational managers to make informed decisions. Tools are available to manage and report on standard key fleet performance indicators such as schedule adherence with early and late running indicators.

This integrated bus-centric view enables information to be utilised by all transport users:

- Local authorities – for ongoing assessment of transport network conditions and planning.
- Transport operators – for implementing intelligent fleet management solutions.
- General public – information dissemination through website and mobile apps for adding value to journey decision making.

Since its inception, Cloud Amber has been delivering innovative solutions within the traffic and transport sectors by creating an integrated platform for data and intelligence, Cloud Amber is able to provide a truly differentiated offering that bridges operational management and customer experience. The Cloud Amber solution creates the ability to take transport management to the next level.

Specific areas of benefits already being delivered include:

- More accurate predictions, journey times and operational management decision making - Through the integration of live traffic conditions and in particular when incidents and delays occur, a more informed view for decision making can be enabled.
- Traffic signal priority - Creating a more holistic view with new levels of sophistication for priority and adherence management.
- Next generation passenger displays - Delivering on-street displays integrated with technologies such as Bluetooth detectors, providing additional operational intelligence such as queue numbers. TFT displays also give the opportunity to provide value added content for passengers.
- Historical analysis - Creating an integrated and “to the second” accuracy approach with real-time traffic conditions to add further intelligence into operational decision making and reporting.
- Reduced cost of ownership - Ultimately by utilising on-vehicle equipment such as the Electronic Ticket Machine this removes the requirement for black-boxes effectively enabling zero on-vehicle maintenance. By leveraging GPRS (General Packet Radio Service) communications rather than traditional radio solutions means that data configuration and maintenance is fundamentally reduced.
- Customer experience and patronage - By integrating into Electronic Ticket Machine revenue data, the potential is to measure, link and report on the impacts of journey adherence, congestion and patronage.
- Operational process improvements and profitability - By undertaking data analysis and targeting headway performance and timetable automation, small percentage improvements in efficiencies can lead to multi-million pound reductions in operational costs.

For further information on any of our products or services, please contact us.
Key Areas of Business

Software

Network Management - Argonaut is the number one choice and market leader for Urban Traffic Management and Control (UTMC) command and control systems across England and Wales. Enabling traffic managers to model, monitor and control the environmental effects of travel, as well as reducing congestion to maximise the use of a limited road network, all using Urban Traffic Management and Control (UTMC), Information exchange between traffic management centres (Datex II), data protocol for traffic and travel related information via Transport Protocol Experts Group (TPEG) and other recognised industry protocols.

Fleet Operations - A complementary feet management solution capable of broadcasting vehicle and traffic information in real time. Icarus is a fully integrated web-based solution with complete accessibility anytime and anywhere via smartphone, tablet or computer.

Informed Personal Travel - Providing a complete series of broadcasting output channels and built using the latest Microsoft technology for accessing and viewing travel information in a more simple and easy manner. Voyager channels include web, mobile and SMS with optional further outputs on Digital Interactive Television (DITV), mp3 download, kiosks, broadcast screens and links to satellite navigation systems. Effective, advanced and bespoke travel apps have been designed and developed by our sister company Reading Room (an idox company).

Integrated Real-Time Display Systems

Cloud Amber has built a large amount of experience in delivery, upgrade and maintenance of Real Time Information hardware and service solutions for clients globally and insuring all display products are developed and delivered successfully. Cloud Amber has also successfully supported the transition of systems from Private Mobile Radio based technology to GPRS (General Packet Radio Service) and now to 3G/4G.

All platforms have been developed and is compatible with all existing display products, ranging from the new highly adaptable Quattro Post, a robust aluminium post with the ‘industry standard’ wide channel on four faces, to the new technically innovative Solar Eclipse low powered real time display, this on-demand display is both unique and innovative in its operation and performance, setting the standard in sustainable real time products.

Communications

Having successfully converted and upgraded a number of older systems from Private Mobile Radio based technology to modern 3G/4G enabling HD quality and reducing the need to invest in unnecessary hardware.

Installation

Our experience of on-street and on-vehicle installations combined with our highly committed and diligent approach, enables us to safely deliver an efficient and high quality installation process, from groundworks and electrical works all the way through to the final phase of commissioning and final acceptance testing.

Upgrades

Providing a seamless transition to all systems with zero downtime to existing systems improving accuracy and reliability.

Maintenance

One of the key delivery area of a successful solution is the preventative maintenance of transport systems and software. The quality of this service is fundamental when it comes to system performance as well as meeting service level agreements and requirements. Cloud Amber has a strong and experience team to action all maintenance actions in the best possible standard.
Eclipse System
The Eclipse System

For several years Cloud Amber have been involved in the repair and maintenance of solar Real Time Information Systems for several clients, it has been a constant battle to keep them operational due to poor design and manufacturing defects, there is however one common theme, these original systems did not work due to the manufacturers failed understanding of the basic principle behind this type of display power system.

The challenge to overcome this is that you can only effectively recover 1watt hour of energy in the winter time. Various other systems on the market are always constantly on in some form - we have seen competitors add expensive and unsightly solar panel arrays with extensive battery banks to try and make their systems work, with very little success.

By developing an on demand system and utilising low power electronics and high efficiency photovoltaic (PV) panels we can recover a minimum of 11 hour's worth of on time even on the bleakest of a winter's day.

The Eclipse system has been developed to be both reliable and available, which through various developments and site trials have proven success over the years without a single software or hardware failure over multiple site deployments.

On Demand Display

The Eclipse system is an on-demand (zero current drain sleep state) system, the on-demand function means that the internal hardware is used for only a small proportion of the day when activated, compared to a conventional display which runs 24 hours a day. The on-demand function, signifies that the lifespan of the hardware is increased and less likely to fail, but more importantly it uses a fraction of the energy of a traditional system which has the electronic systems energised constantly, even when in a low power sleep state.

As with most electronic devices run by various operating systems, continuous use with no break and no re-boot leads to poor software performance and complete failures. The on-demand function means that each time the display is activated the computer will start from fresh until it re-enters its sleep state.

Although the Eclipse system is designed to be solar powered, the on-demand principle used works equally well when there is a mains power supply present. The on-demand function even with a mains powered supply will significantly reduce the energy consumption compared to a traditional display, automatically powering off the system when not required or when services have finished.
Sustainable and Reliable

The Eclipse System, in its solar powered form is ultimately a low powered display that utilises the latest innovations in solar energy. Using the most efficient Maximum Power Point Tracking algorithms, the regulator can harvest 30 – 40% more energy than previous generation controllers.

The solar Eclipse has been developed to easily operate in a high patronage environment throughout winter, with an articulating solar panel to further maximize solar harvesting.

The sustainable benefits of the Eclipse system ensures a maximum trouble free service life of all the hardware and software.

There are also huge savings to be made with the Solar Eclipse system compared to a traditional mains powered system, there is no need to channel in power to a site, connection costs or running costs (even at night).
Eclipse Display

Screen Specification

The screen is located inside the secure housing behind a sacrificial layer of UV stabilised polycarbonate – easily replaceable in the event of any damage. Behind the polycarbonate, mounted to the main gear tray (for isolation from the housing) is a LED backlit 10.6” HD LED screen.

The LED backlit screen is capable of showing a variety of images (static and dynamic) along with videos (mains powered Eclipse only) all in HD colour (1024 x 768 landscape).

Activation

To prevent the system activation button being tampered with, the Eclipse system is activated by pressing and holding the button (for 1-2 seconds) on the front face of the housing – this small attention to detail reduces the ‘play’ factor of traditional activation buttons.

When the button is depressed it illuminates a green ‘power on’ logo to show successful activation – the logo and the colour (green) is synonymous with starting-up and the ‘on’ state of electrical equipment.

Start-Up Screen

When the system is activated a start-up screen is displayed for approximately 15 seconds. The start-up image (1024 x 768 landscape) can be modified to suit the client, service, route and/or the sustainability or benefits of the display.

Real-Time Passenger Information will be displayed shortly
Operational Screen

Once the computer boots up and displays the start-up screen, a holding screen (configurable to show a variety of images, logos and text) shows for a further 15 seconds whilst the computer continues booting and connecting through the modem via the General Packet Radio Service (GPRS) network. The prediction screen then loads and within a few seconds predictions will appear, these predictions will then count down for the remainder of the on-time providing true on-demand Real Time Information.

The HD display can clearly show up to 10 lines of predictions with service, destination and expected time. Information such as disruption to services or information about the stop can be pushed to the screen through the Content Management System messaging facility (screen blanking via messaging is also supported).
Duration

The length of time once the Solar Eclipse screen is activated and shows predictions is carefully calculated to make sure the display is suitable for high patronage sites throughout the winter when the amount of sunlight is limited.

At present, from September through to March the screen has an ‘on-time’ of approximately 3 minutes - during summer months when the system can harvest more energy, the screen can remain on for up to 20 minutes, however this can be changed.

The Eclipse system in its mains powered format is not limited to the amount of time the screen is operational, this could be set to whatever duration time is required.

If the system is mains powered the duration time can be set to much longer. By design the display is remained off when not needed to save energy and to extend component lifespan.

<table>
<thead>
<tr>
<th>Service</th>
<th>Destination</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR1</td>
<td>Tregarra Park and Ride</td>
<td>2min</td>
</tr>
<tr>
<td>304</td>
<td>Truro</td>
<td>9min</td>
</tr>
<tr>
<td>PR1</td>
<td>Tregarra Park and Ride</td>
<td>17min</td>
</tr>
<tr>
<td>PR1</td>
<td>Tregarra Park and Ride</td>
<td>32min</td>
</tr>
</tbody>
</table>

Museum Bus Stop

Branding and Livery

The success of new technologies like the Eclipse system, is directly linked to how they are promoted and how users interact with them.

The housing can be supplied with digitally printed and laminated vinyl graphics to help promote the display, route, service and/or operator.

In addition to the digitally printed graphics, a range of colour coded accessories to any RAL colour (colour matching system for powder coating) to help brand the stop, route, service and/or operator.
Solar Eclipse System

Solar Panel
The latest technology is used to ensure maximum harvesting and reliability from the panels - guaranteed power output of 90% for 12 years and 80% for 25 years. The panels are mounted to the top of the Quattro post specifically designed to handle the weight and wind loadings for the UK, with options for other territories.

Battery
SEC Batteries have been used in the industrial battery market for nearly 30 years. SEC’s high quality, long design life, reliable Absorbed Glass Mat technology lead acid batteries have a proven record.


Controller
The solar charge controller and control algorithm can quickly and accurately track the best Maximum Power Point of photovoltaic array in order to obtain the maximum solar energy in time, improving energy efficiency. With a Modbus communication protocol interface, it is convenient for Cloud Amber to expand applications as well as monitor performance.

Panel Articulation
To compensate for the sun’s lower trajectory in the late autumn to early spring months the mounting for the solar panel has been designed to articulate to approximately 17° degrees through the darker months and then return to 45° degrees for the summer months this ensures harvesting maximum energy.
In addition to being able to angle the panel to suit the seasons, the design allows the ability for the panel to be rotated at the top of the post through 360° degrees to make sure the position is the most effective direction for harvesting energy.

Prior to any installation a survey of each site is carried out to make sure that the site is suitable, i.e. not behind a large structure, under a large tree or an urban canyon that would prevent energy harvesting.
Mains Powered Eclipse System

In some instances, a mains powered Eclipse system may be preferred over the solar alternative for a number of reasons.

Urban Canyon

Some sites may be located on a road which is surrounded by high rise buildings on both sides creating an urban canyon, where it may be unsuitable to use a solar system - reducing solar harvesting.

High Patronage Sites

Although the Eclipse system in its solar configuration is suitable for, in excess of 100 operations per day, there may be some sites that due to high patronage require more operations and longer screen activation than the solar option.

Reduced Power Consumption

The Eclipse system utilises low power electronics throughout the system, coupled with the on-demand function the Eclipse system is able to significantly reduce the running costs over a traditional Real Time Information display commonly found in a bus shelter or stop.

At a stop with a relatively high patronage, the mains Eclipse system may use less than 100watt, whereas a 3 line LED on throughout the night and running all day could use up to 2kilowatt for the same length of time.

When this energy reduction is multiplied across the display estate, this can lead to substantial financial savings and significant environmental benefits. Local authorities have a major role to play both in terms of their direct impact and their influence over the wider community and by adopting this approach they are more likely to achieve low energy objectives.

Eclipse Mounting Options

The Eclipse housing is specifically designed to be mounted on to the Quattro post, in some locations mounting into a shelter may be more practical or convenient.

See Quattro Systems for further information on mounting options.
Structural Testing and Wind Loadings

The Quattro post has been tested to ensure it complies with Eurocodes including British Standard (BS) EN 12767 ‘Passive safety of support structures for road equipment’.

Using NAL sockets (a robust ductile iron fitting which has been designed to secure all types of illuminated and non-illuminated street furniture in the ground) where possible to ensure that in the event of a road traffic collision, the post remains attached with the socket securely in the ground. This allows for the post to be removed and a new one installed, without the need for a specialist team.

Accessories

The wide channel on each of the Quattro posts four faces allows the option to securely mount a variety of displays onto the post. We can supply a variety of bus stop infrastructure onto each of the four faces from bus stop flags, Traffic Regulation Order plates or a selection of timetable cases.

In addition, we can also supply the appropriate brackets to fit third party infrastructure onto the Quattro post and design and supply of flags with digitally printed and laminated flag graphics, is also available.

Branding and Livery

Having invested in the latest technology, now is the time to make sure the stops are highly effective and presented in a fashion that highlights them out on the street. By using local authority or operator branding a stop can be transformed into a highly visible and attractive display that makes the use of the service easier and more enjoyable for the user.

In addition to adding a livery to the display housing, a colour coded bus stop infrastructure, reflective strips for approaching buses or colour coded strips to highlight the local authority of a particular service can be supplied.

Stop names or route services can also be added to the post to make it easier to identify stops at busy and crowded transport hubs or at a interchange.
Shelter Mounting

The positioning of a display inside a shelter is often overlooked but when installed correctly it can make a huge difference to the users and ultimately the success of an effective passenger information system.

Before any display is installed in a shelter, a site survey is required to:

1. Locate a suitable mains power supply and various electrical isolation points for the shelter (if existing) and check inside the isolation box for a space for the transformer.
2. If no suitable mains power is present, identifying and confirming a position for the feeder pillar and cable routing options.
3. Survey the shelter type, construction, materials and glazing.
4. Ascertain the layout of the shelter and the most appropriate position for the display.
### Installation

Our preferred method of installation is to remove a glazing panel and replace with an opaque panel (with matching livery) which the display housing can be mounted onto.

The Eclipse systems low power usage allows us to run low voltage DC power cables through the frame of a shelter to the display, making the installation relatively simple and easy.

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### Timetable Casing

Attractive, high strength timetable cases are available in various sizes and designs to suit all requirements, allowing a more effective approach to displaying printed timetables.

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### Bus times

**from Great Ancoats St/Adair St (C)**

**Mondays to Fridays**

**216**

to Beswick, Clayton, Droylsden, Fairfield, Ashton-Under-Lyne, Stalybridge

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### Cloud Amber

Cloud Amber offers a complete automated timetable printing solution to advance the travellers experience. At the touch of a button create high quality customisable timetables.

See the Timetable Publisher flyer for further information.

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### Integrated Real-Time Solutions
3 Line LED and TFT Displays
The 32 character display is one of the most frequently used display types across the UK. Over the years Cloud Amber have supported the installation, maintenance and upgrading of these displays for various clients.

The 32 Character Landscape display is our most recent product. Utilising collective experiences and interacting with the display range to develop the 32 Character display range.

Like all our display products, we have simplified the internal components and used modular housing to give a simple and fast turnaround time to produce and deliver. The housing is designed to take either an LED array or cut down TFT screen, making it easy to change or replace, faulty and damaged panels or even alternate the display.

The housing is also available in a double sided configuration, with the option of having a TFT and LED on either side or the same display type on different sides showing information.

**Low Power Mode**

Like the Eclipse systems ‘on-demand’ feature the 32 Character LED and TFT displays can be supplied with an optional low power controller and activation button. The low power function allows the internal screen to be used for only a small proportion of the day when activated (duration of the screen being activated can range from 1 minute to 1 hour on each activation), compared to a conventional display which runs 24 hours a day. The low power function also ensures the lifespan of the screen is increased and less likely to fail, but more importantly it uses a fraction of the energy of a traditional system which has the electronic display on constantly, even when services have finished.

The low power function will significantly reduce the energy consumption compared to a traditional display system aswell as reduce the light pollution from the display.
Sustainable and Reliable

The driver platform is incredibly reliable and robust, with over 500 installations and upgrades without a single failure. In addition to the low power function which reduces the energy consumption, the sustainable benefits of the system ensure a maximum trouble-free service life of all the hardware and software.

3 Line LED Display

As with other products we offer, the LED and TFT housing are based on our design ethos of ‘keeping it simple and modular’. The housing is fabricated from an aluminium system which allows us to quickly and easily assemble units without the need for expensive or specialist machinery.

The key features of the design allow us to offer a single housing that can take either a LED array or cut down TFT screen, with gear trays that slide into the housing quickly and easily.

Another advantage of this design is that it allows us to assemble single and double-sided units running off either single or separate SBC batteries if required to produce two mirrored or separate display outputs.
**Technical Description**

3 Line 32 Character LED Display

- **Technology**: LED Through Hole
- **Configuration**: Single sided outdoor 9 pixels high x 192 pixels wide per Line x 3 lines
- **Active area (Display Viewing Area)**: 148.43mm High x 7797mm wide approximately
- **Characters Per Line**: 9 Pixel High = 32 Characters
- **Graphic Image Options**: Supported (Wheelchair symbols etc.)
- **Font**: Proportional, Fixed and Bold (with descenders)
- **LED pitch**: 4.1mm
- **LED Colour**: Amber 592nm
- **Viewing angle**: +/-35° in all directions
- **Viewing Distance**: 18m at 7 Pixel High Characters
- **Maximum brightness**: 1,000mcd / LED (operated at low current)
- **Enclosure**: Enclosure aluminum 2mm/3mm
- **Front opening, Hinged LED Assembly Plate, IP67**: Fabricated aluminium enclosure with polyester powder coating
- **Screen**: 5mm Lexan (grey tint) vandal resistant
- **Sign Colour**: Powder coat RAL5005 (Signal blue)
- **Dimensions**: Estimated 215mm x 950mm x 200mm (HxWxD)
- **Auto dimming**: Light sensor located on front panel with auto adjustment from 15% to 90%
- **Temperature range**: -25°C to +60°C
- **Humidity**: 5% to 95% without condensation
- **Power**: 110/220VAC or 220/240V AC 82 Watts
- **Weight**: 17kgs
- **Communication**: Ethernet Transmission Control Protocol (TCP) / Internet Protocol (IP) (optional), RS485/RS422/RS232
- **Dimensions**: 1164mm x 723mm x 200mm
- **Protocol**: Integrated, Dialog Data Exchange Modal (DDX)
- **Character set**: English (3 individual character sets with multiple font heights)
- **Application Code, Fonts, Defaults, Configuration Files**: Remotely upgradable
- **Diagnostics**: LED Monitoring, Power Supply Usage monitoring, Communication failure, Temperature fail (Over temperature protection shutdown), Diagnostic power up banner
- **Sign Functionality**: Text Static / Left / Right Scrolling (if text does not fit its field width), Single character flashing (selectable with special command character), Synchronized page alternating
- **Selecteable special notice as static text over all available lines or over one selected line (text is scrolling, if text does not fit line width)**
- **Fallback screen with a predefined text is displayed after a configurable connection timeout**
- **Approvals**: UL/CE Marked
TFT Display

As with the 32 character 3 Line LED Display, the cut down TFT display comes in the modular aluminium housing and in several configurations (single or double sided).

Key Features

- 5mm polycarbonate anti-vandal, anti-scratch screen
- Automatic brightness control
- -25 to +60°C operating temp
- 28" resized TFT, 1000 nits (Brightness), LED backlit
- IP65 Rated
- Dimensions 200 x 900 x 200mm (H x L x D), approximately
- Weight 19kgs, approximately
- Optional Sun Hood

Mounting Options

Our modular housing is specifically designed to be mounted on to the Quattro post, however in some instances mounting onto an existing post or into a shelter may be more practical or convenient.

See Quattro Systems for further information on mounting options.

Display Housing Bracket

Specifically designed to work in conjunction with our Quattro post, the housing bracket is a simple and quick way of fixing a stretched LED/TFT housing, with the added advantage of being able to take other manufacturer display systems, both single and double sided displays are all available with optional sun hoods.

The stainless steel bracket is designed to slide into the wide channel of the post on any side. It is fixed at the required height (typically the top) by way of stainless steel clamps (hidden from view).

As the Quattro post has the same wide channel on each face, this allows unique positioning of the display. The display can be mounted on each face (using the same housing bracket) giving the ability to use the post as an alternative to multiple posts and also as a way of mounting multiple types of display in different directions for busy interchanges or crowded sites.
Structural Testing and Wind Loadings

The Quattro post has been tested to ensure it complies with Eurocodes including British Standard (BS) EN 12767 ‘Passive safety of support structures for road equipment’.

Using NAL sockets (a robust ductile iron fitting which has been designed to secure all types of illuminated and non-illuminated street furniture in the ground) where possible to ensure that in the event of a road traffic collision, the post remains attached with the socket securely in the ground. This allows for the post to be removed and a new one installed, without the need for a specialist team.

Accessories

The wide channel on each of the Quattro posts four faces allows the option to securely mount a variety of displays onto the post. We can supply a variety of bus stop infrastructure onto each of the four faces from bus stop flags, Traffic Regulation Order plates or a selection of timetable cases.

In addition, we can also supply the appropriate brackets to fit third party infrastructure onto the Quattro post and design and supply of flags with digitally printed and laminated flag graphics, is also available.

Branding and Livery

Having invested in the latest technology, now is the time to make sure the stops are highly effective and presented in a fashion that highlights them out on the street. By using local authority or operator branding a stop can be transformed into a highly visible and attractive display that makes the use of the service easier and more enjoyable for the user.

In addition to adding a livery to the display housing, a colour coded bus stop infrastructure, reflective strips for approaching buses or colour coded strips to highlight the local authority of a particular service can be supplied.

Stop names or route services can also be added to the post to make it easier to identify stops at busy and crowded transport hubs or at a interchange.
Post Mounting

Although there are a wide range of various posts used across the UK for putting up digital displays and signage, there are a number of more commonly used types listed below. In most occasions we are able to modify our existing displays and brackets to suit, however in some instances a bespoke solution is developed.

Tubular Steel Post

A 76mm diameter post or Tubular Steel Post is often used (frequent with a large diameter lower section for isolating the power source) to take a digital display. As most of these posts are not fabricated with a suitable arm, with sufficient strength and fixings an arm has been designed that connects over the top of the Tubular Steel Post, giving the required fixing and strength.

An optional sun hood could also be installed to the display housing for additional shading when the housing is fitted with a TFT display.
Elite Post

The Elite post is a commonly used aluminium extruded post used across the UK, the current housing arm bracket can be used on this post with no need for further additional bracketry.

Shelter Mounting

The positioning of a display inside a shelter is often overlooked but when installed correctly it can make a huge difference to the users and ultimately the success of an effective passenger information system.

Before any display is installed in a shelter, a site survey is required to:

1. Locate a suitable mains power supply and various electrical isolation points for the shelter (if existing) and check inside the isolation box for a space for the transformer.
2. If no suitable mains power is present, identifying and confirming a position for the feeder pillar and cable routing options.
3. Survey the shelter type, construction, materials and glazing.
4. Ascertain the layout of the shelter and the most appropriate position for the display.
The preferred location for a LED/TFT display would be inside the shelter at the approach end, so travellers waiting inside the shelter can easily view the display whilst awaiting for the approaching bus.

All shelter brackets are fabricated from stainless steel (as are all fixings used) to ensure their durability and finished in a polyester powder coated finish to match the shelter.
<table>
<thead>
<tr>
<th>Service</th>
<th>Destination</th>
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<th>Time</th>
<th>Status</th>
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<td>MC4</td>
<td>Elland</td>
<td>C</td>
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</table>
H Frames

A simple and easily customisable way of mounting a medium to large digital display in open spaces with no alternative to ground fixing.

Design

At the heart of the H Frame system is the Quattro post, allowing developing and manufacturing of H Frames to suit any screen size currently on the market.

From experience of installing H Frames and other similar structures, attention to how the digital display integrates into its housing is often overlooked. The digital display is the heaviest and most complicated part of any installation, with this in mind our team have extensive experience in installation and maintenance to look at solutions to ensure the design meets the requirements of the installation.

By using a simple design based around our modular Quattro post, we have been able to successfully create a range of H Frames to suit a number of common sizes and options more easily within a short lead time.
Technical Specification

The table below gives the overall dimensions of our H frames to suit the most common sized digital display. Additional information on sizes, weights and cable access can be provided upon request. (sizes do not include the optional Sun Hood).

<table>
<thead>
<tr>
<th>Display Size</th>
<th>Orientation</th>
<th>Resolution/Aspect Ratio</th>
<th>Size (mm)</th>
<th>Configuration</th>
<th>Power (W) Consumption (Typ-Max)</th>
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<tbody>
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<td>32” TFT</td>
<td>Landscape</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1050</td>
<td>Single Sided</td>
<td>88/190</td>
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<tr>
<td>42” TFT</td>
<td>Landscape/Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1445/750</td>
<td>Single and Double Sided</td>
<td>88/220</td>
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<tr>
<td>46” TFT</td>
<td>Landscape/Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1245/635</td>
<td>Single and Double Sided</td>
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<tr>
<td>55” TFT</td>
<td>Landscape/Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1525/855</td>
<td>Single Sided</td>
<td>100/235</td>
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</table>

Assembly and Installation

All our H Frames are supplied assembled, this is to ensure that they are fully assembled correctly. The only items that is not attached, is the Sun Hood this is to protect against any damage.

There are two options for installing the H Frame system, depending on the make-up of the intended site and requirements. As the H Frame system is modular and can be manufactured to take almost any screen size there may be the requirement for a more bespoke solution – We can design and engineer any base required (in conjunction with our structural engineer).

For extra strength each frame is supplied with a disposable Tie Rod to secure the posts, this can easily be removed either before or after installation.

Installation drawings can be supplied, along with a method statement and all further information required.
Totems

A standalone single or double sided large digital display ideal for high footfall and prestigious sites with additional space for wayfinding and communication.

Design

Similar to the H Frames, the Totems are designed around the Quattro post, however this particular design incorporates added strength and robustness in order to accommodate larger screen sizes and additional cladding.

The ruggedized screen housing sits between the Quattro post allowing easy access to communication ports, power and antenna, depending on the chosen configuration of cladding (semi or full).
Technical Specification

The table below gives some basic information on the specification of our Totems. Additional information on sizes, weights and cable access can be provided upon request.

<table>
<thead>
<tr>
<th>Display Size</th>
<th>Orientation</th>
<th>Resolution/Aspect Ratio</th>
<th>Size (mm)</th>
<th>Cladding</th>
<th>Configuration</th>
<th>Power(W) Consumption (Typ-Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>42&quot; TFT</td>
<td>Landscape/Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1445/750</td>
<td>Half/Full</td>
<td>Single and Double Sided</td>
<td>88/220</td>
</tr>
<tr>
<td>46&quot; TFT</td>
<td>Landscape/Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1245/635</td>
<td>Half/Full</td>
<td>Single and Double Sided</td>
<td>76/205</td>
</tr>
<tr>
<td>55&quot; TFT</td>
<td>Landscape/Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>2210 x 1525/855</td>
<td>Half/Full</td>
<td>Single Sided</td>
<td>100/235</td>
</tr>
</tbody>
</table>

Assembly and Installation

In a similar fashion to our H Frames, we supply our Totems fully assembled ensuring the product is fully assembled, correctly manufactured and tested before it leaves the factory.

As the Totems are typically larger and heavier than their H Frame counterparts, a NAL socket (a robust ductile iron fitting which has been designed to secure all types of illuminated and non-illuminated street furniture in the ground) installation is not recommended but a steel spigot which locates each leg of the unit, this can either be bolted down on to an existing suitable foundation or bolted to a specially designed concrete raft, in either situation a drilling/bolt location jig can be supplied.

The Totems can be lifted into position from the top via two M10 lifting eyes.
Optional Extras

Sun Hood

In some instances, a Sun Hood may be required for the display in sites with direct sunlight (not fitted as standard). The Sun Hood is secured to the Quattro post in several places to ensure they are sufficiently strong and more importantly ensuring they provide maximum shade for the TFT screen.

All Sun Hoods are made from aluminium so do not hinder the antenna and are painted white on the top side to mitigate against any thermal movement that can often occur with darker painted materials.

NAL Socket

The NAL post retention socket (a robust ductile iron fitting which has been designed to secure all types of illuminated and non-illuminated street furniture in the ground) is becoming common standard across the UK and it is designed and tested to remain in position in the ground in the event of a road traffic collision. The Quattro post is connected via a short section of 76mm post, which deforms and bends on impact (in the event of a road traffic collision) allowing the socket to remain in position and the Quattro post to be recovered and re-used.

Bolt Down Base

In some instances, a bolted down arrangement may be required or preferred to a NAL socket (a robust ductile iron fitting which has been designed to secure all types of illuminated and non-illuminated street furniture in the ground).

We have a standard fabrication we use for the Quattro system which is structurally tested for majority screen sizes. Our structural testing documentation specifies suitable concrete base sizes, composition and fixings to be used.

The mild steel base is zinc primed before polyester powder coating to prevent corrosion and maintain strength.
**Accessories**

The Quattro post is the first commonly available transportation infrastructure post that is specifically designed to take large format digital displays, whilst still being able to accommodate traditional Bus Stop Flags, Timetable Cases and Traffic Regulation Order plates.

**Post Finishes**

The Quattro post comes in a silver anodised AA25 finish as standard, however for some products and schemes an alternative may be required.

We are able to supply the Quattro post in a variety of polyester powder coated colours commonly found in most RAL (colour matching system for powder coating) and British Standard (BS) colour charts.

We can also colour match to a specific colour if a sample can be provided (minimum order quantity apply on custom colours).
**Bus Stop Accessories**

The wide channel on each of the Quattro posts four faces allows the option to securely mount a variety of displays onto the post. We can supply a variety of bus stop infrastructure onto each of the four faces from bus stop flags, Traffic Regulation Order plates or a selection of timetable cases.

In addition, we can also supply the appropriate brackets to fit third party infrastructure onto the Quattro post and design and supply of flags with digitally printed and laminated flag graphics, is also available.

**Branding**

In addition to the accessories that can be added to any of the Quattro post faces, branding can be added by way of colour coded infill strips - these can be inserted to any of the visible faces and come in a range of RAL (colour matching system for powder coating) and stock colours, for added visibility we can also apply a reflective vinyl to increase visibility to approaching vehicles.

If required, we are able to design and supply digitally printed and laminated graphics and names to increase branding.
Internal Digital Displays
Internal Digital Displays

The super slim XS screen series delivers the longevity and reliability users expect from a large format display. The reduced depth and light weight makes it easy to handle and integrate into recesses and housings.

Technology

Digital displays are an integral part of real-time systems at busy stations and interchanges, displaying a wide range of information.

- LED backlighting delivers both environmental and economic benefits.
- Thermal monitoring and control, advanced thermal control and monitoring for public displays together secures longevity and reliability even in high demanding installations.
- User fan controls include fan speed and fan trigger point control.
- Metal chassis assists better heat dissipation and rigidity.
- Superior image, high brightness and contrast.
- User temperature monitoring via On Screen Display, Local Area Network (incl. Simple Network Management Protocol) and via an RS-232C connection (Serial port data communicator).
- Internal built-in 10watt speakers enable a simplified installation with quality sound.
- Low reflection rate for better readability in high bright environments.

Performance

Extending the use of display with a high-performance, commercial grade panel and design:

- The new models combine commercial grade panels with LED backlighting, delivering optimum image quality with impressively low power consumption. The metal chassis and superior build quality guarantees first class performance.
Smart and Flexible

- Expanded connectivity with a built-in expansion slot for upgradability.
- Integrated speakers save installation costs and improve appearance.
- Protective glass and touch panel ready design provide opportunities for module security and interactivity upgrades.
- Orientations include, landscape and portrait to allow flexible content placement to maximize audience awareness.
- Daisy chain capability for up to 9 displays is ideal for video wall or back to back installations.
- Reduce installation costs with copy settings via RS232 on large roll outs or benefit from NaviSet Administrator 2 for remote control and monitoring.
- Screens can automatically send an email to a specified email address in case a fault is detected. This feature helps detect potential failure pro-actively to reduce downtime.

Upgrade Ready

A future proof display with a optional NEC slot. This slot provides connectivity for Open Pluggable Specification (OPS) compliant devices, creating a seamless integration across a variety of accessories.

- Open Pluggable Specification is the first industry wide standardisation of option slot accessories geared to simplify installations, use and maintenance of digital signage.
- No external connections required – Digital Visual Interface video, Stereo audio, RS-232 control and power are all passed internally from the display to the Open Pluggable Specification device.
- Simple integration and maintenance results in easier and less expensive installations and operation.

Upgrade with Computers, HD-Serial Digital Interface, WiFi Direct and more.
The table below gives a brief overview of the most common sized screens we offer, further technical specifications upon request.

<table>
<thead>
<tr>
<th>Display Size</th>
<th>Orientation</th>
<th>Resolution/Aspect Ratio</th>
<th>Size (mm)</th>
<th>Power(W) Consumption (Typ-Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32” TFT</td>
<td>Landscape / Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>787 x 476 x 94</td>
<td>88/190</td>
</tr>
<tr>
<td>42” TFT</td>
<td>Landscape / Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>973 x 565 x 68</td>
<td>88/220</td>
</tr>
<tr>
<td>46” TFT</td>
<td>Landscape / Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>1058 x 613 x 65</td>
<td>76/205</td>
</tr>
<tr>
<td>55” TFT</td>
<td>Landscape / Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>1250 x 720 x 64</td>
<td>100/235</td>
</tr>
<tr>
<td>65” TFT</td>
<td>Landscape / Portrait</td>
<td>1920 x 1080 - 16:9</td>
<td>1540 x 909 x 88</td>
<td>185/360</td>
</tr>
<tr>
<td>80” TFT</td>
<td>Landscape / Portrait</td>
<td>1920 X 1080 - 16:9</td>
<td>1836 x 1061 x 86</td>
<td>*TBC</td>
</tr>
</tbody>
</table>

*Additional sizes available with touch screen functionality
Quattro System

At the core of all our infrastructure supplied products is the Quattro post, it allows us to easily develop and manufacture a range of products to suit all environments, displays and sites.

Products in the Quattro range:

- Bus stops
- Eclipse system
- H Frames
- Totems
- Wayfinding
- Broadcast screens
- Parking signage and bollards

The Quattro post is the first commonly available transportation infrastructure post that is specifically designed to take large format digital displays.
Design

Manufactured from high grade aluminium and finished in a modern looking anodised AA25 finish, the Quattro post utilises the industry standard ‘wide channel’ to allow a variety of different manufacturers infrastructure to be fitted easily without the need for expensive and complicated bracketry.

By using the modular Quattro design, we have been able to successfully create a range of products to suit a number of common sized screens, allowing us to comfortably supply our customers in weeks rather than months.

Structural Testing and Wind Loadings

The Quattro post has been tested to ensure it complies with Eurocodes including British Standard (BS) EN 12767 ‘Passive safety of support structures for road equipment’.

However, as the system is modular, and thus customisable, for each new configuration we will carry out a secondary check to ensure that it complies with Eurocodes, giving our customers peace of mind in their new display.
**Installation**

Using NAL sockets (a robust ductile iron fitting which has been designed to secure all types of illuminated and non-illuminated street furniture in the ground) where possible to ensure that in the event of a road traffic collision, the post remains attached with the socket securely in the ground. This allows for the post to be removed and a new one installed, without the need for a specialist team.

There are two options for installing the H Frame system, depending on the make-up of the intended site and requirements. As the H Frame system is modular and can be manufactured to take almost any screen size there may be the requirement for a more bespoke solution – We can design and engineer any base required (in conjunction with our structural engineer).

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Cloud Amber - Enabling the efficient movement of people and goods

Cloud Amber provides services and solutions to enable total network management across all forms of transport ensuring more efficient and cost effective strategic and localised control. In addition, Cloud Amber provides proven fleet operations improving efficiency, operational costs and service performance as well as integrated and informed personal travel assistance across all geographical boundaries and transport modes.

Cloud Amber is also a leading innovation in intelligent and deeply integrated solutions saving time and revenue for new or replacement solutions and has successfully developed and deployed new products in the market and challenged the traditionally incumbent and mature positions.

For more information, please visit www.cloudamber.idoxgroup.com or email cloudamber@idoxgroup.com

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