



INTELLIGENT TRANSPORT SOLUTIONS (ITS)

OFFERING A COMPLETE RANGE OF SOLUTIONS TO MANAGE AND MONITOR OUR HIGHWAYS, ENSURING SAFETY FOR BOTH TM OPERATIVES AND THE ROAD USER

BRIDGE STRIKE PREVENTION

MOBILE VMS

SMART TOWER CCTV

TM INCURSION CAMERA

JOURNEY TIME SOLUTIONS

RADAR DATA COLLECTION

BODY & DASH CAMS

The central graphic is a collage of eight hexagonal images, each representing a different ITS solution. The images are arranged in a circular pattern. The top hexagon shows a mobile variable message sign (VMS) displaying a speed limit of 30 and 'SLOW DOWN'. The top-left hexagon shows a bridge with a 'LOW BRIDGE' sign. The top-right hexagon shows a smart tower with multiple CCTV cameras. The middle-left hexagon shows a truck with a 'ROAD CLOSED' sign. The middle-right hexagon shows a white truck with a 'ROAD CLOSED' sign. The bottom-left hexagon shows a person wearing a body and dash cam. The bottom-middle hexagon shows a radar data collection unit. The bottom-right hexagon shows a journey time sign displaying 'DIVERSION ROUTE JOURNEY TIME 16 MINS'.

COMPLETE HIGHWAY SOLUTIONS FROM VPS



MOBILE VARIABLE MESSAGE SIGNS (VMS)

THE DIFFERENCE IS CLEAR

HDC 3260 COMPACT

SAFER, CLEARER TRI-COLOUR MESSAGES

New technology is creating a fresh dimension in the battle to make highway signs stand out from the crowd. Our tri-colour, high definition mobile variable message signs, provide EU pictograms and very accurate representation of the red and white Highway Code traffic signs.

ADVANTAGE HDC COMPACT

Whilst the Advantage HDC Compact mobile variable message sign is compact in size, its high density LED screen has 40% more pixels than most other products on the market today and is capable of displaying near perfect roadside icons.

Applications Include

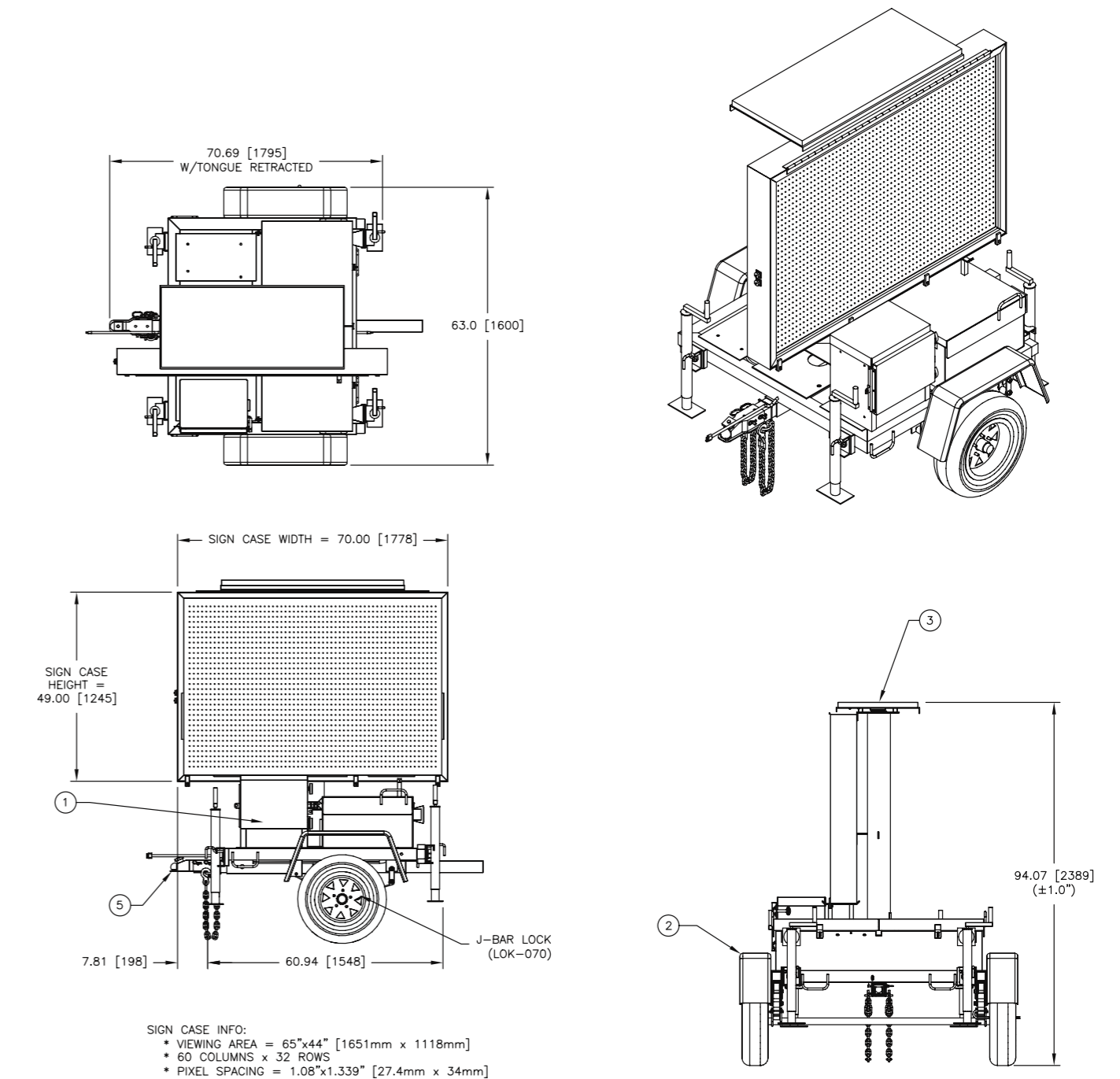
- Traffic and Speed Management
- Advance notice of works and events
- Emergency Services alerts
- Rail and Air Transport messages
- Brand & Advertising
- Urban or network applications with limited space
- Virtual Journey Time (VJT) display
- Over height vehicle & ANPR display

Features & Benefits

- Leading Tri-colour LED display
- More information on one screen
- Clear, accurate TRSGD messages & pictograms
- Integration and interface with other innovative ITS products providing real time data and information
- Fully complies to current standards
- TAL 01/15 and EN 12966
- Full wireless ITS integration through cloud software
- ANPR vehicle nationality detection triggers foreign language warning messages



HDC 3260 DATA SHEET



PRODUCT SPECIFICATION

Operating Height	3490mm Maximum
Travel Height	2387mm (+/- 12mm)
Length	2067/2626mm
Width	1600mm
Weight	750kg

DISPLAY

Can display 5 lines of up to 16 characters



ADVANTAGE 4280

HIGH IMPACT INFORMATION

Suitable for high speed, urban and trunk highways and preprogrammed with up to 200 highways approved messages, the easy to manoeuvre 4280 packs a real punch; advising of major events, highway closures & utility works to name but a few. With a full matrix LED configuration, capable of displaying the highest legibility in messages and graphics 42 pixels high and 80 pixels wide, this versatile sign is essential when considering effective traffic or crowd management. Remote message programming available as standard on all VPS signs, changing the messages from the comfort and safety of your office, PC or smart phone couldn't be easier. Secure username and passwords protect the sign against unauthorised use and the remote monitoring system constantly checks LED pixel integrity, auto-brightness adjustment and battery voltage levels. The 4280 can display 1 to 5 lines of up to 16 characters; offering fantastic clarity. Choose from standard 200mm high fonts or larger fonts as well as pictograms and arrows for maximum impact.

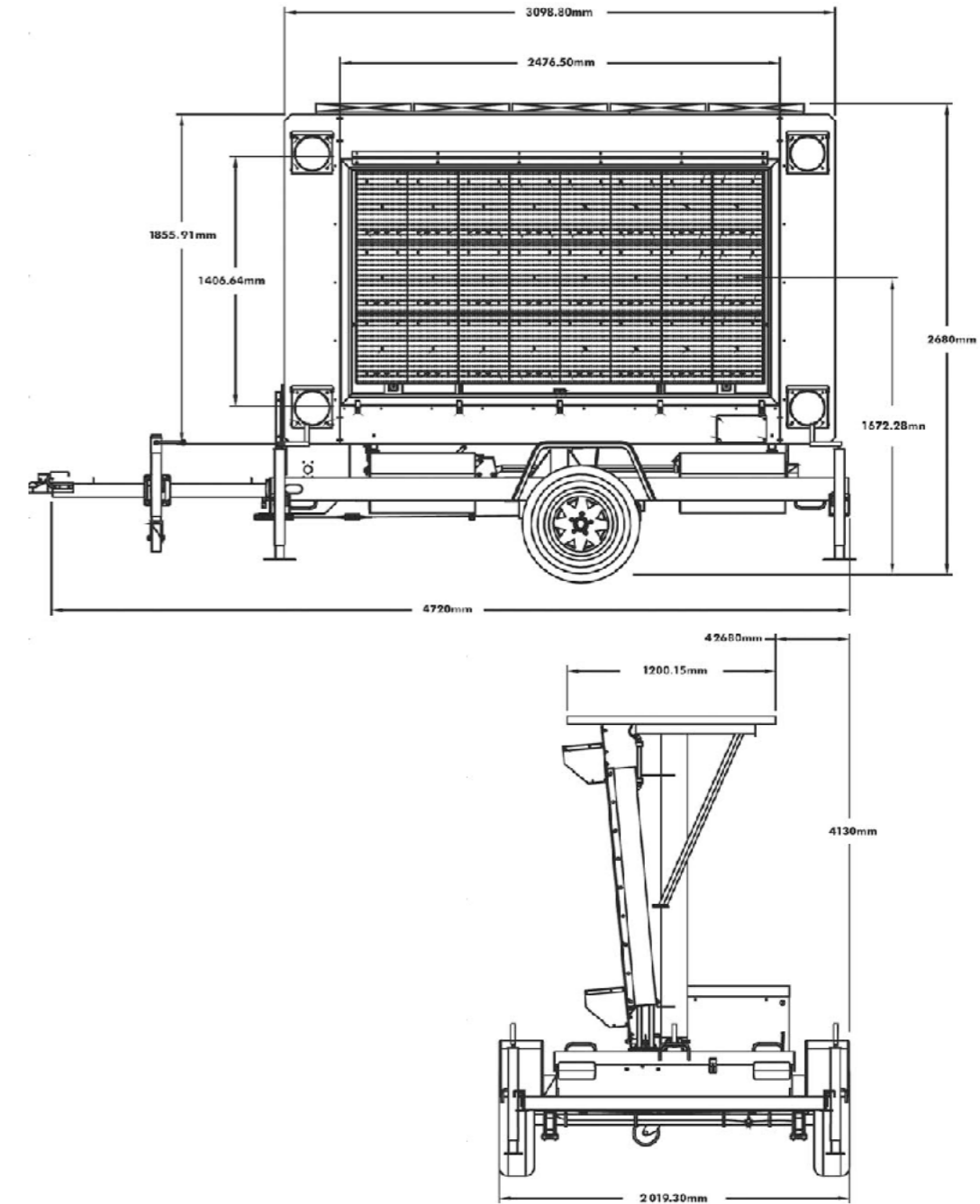
Applications Include

- Traffic and Speed Management
- Advance notice of works and events
- Emergency Services alerts
- Rail and Air Transport messages
- Brand & Advertising
- Urban or network applications with limited space
- Virtual Journey Time (VJT) display
- Over height vehicle & ANPR display
- Work zone exit warning

Features & Benefits

- UK Highways EN12966-1 2005 LED compliant
- HA approved fonts & characters up to 400mm
- Remote operated flashing beacons
- Ultra bright traffic angle LEDs
- Optional GPS tracking
- Hydraulic mast no roadside manual handling
- Displays 1 to 5 lines of up to 16 characters
- Full wireless ITS integration through cloud software
- ANPR vehicle nationality detection triggers foreign language warning messages

4280 DATA SHEET



PRODUCT SPECIFICATION

Operating Height	4130mm Maximum
Travel Height	1855.91mm
Length	4490.46mm
Width	2019.30mm
Character Heights	200, 240, 320 or 400mm
Weight	1800kg

DISPLAY

Can display 5 lines of up to 16 characters



TRAFFIC INCURSION SOLUTIONS

TECHNOLOGY FOR SMARTER HIGHWAYS

VPS Traffic Incursion Camera System is an integrated safety solution for Highway Maintenance personnel and Roadworkers. The system will alert road workers to the danger of an approaching vehicle. This enhances safety and security of the Highway Maintenance personnel working within the work zone. Latest analytic high definition camera system, mounted on our self-powered Smart Tower System, all linked wirelessly to sounders mounted on traditional cones.

Sounders, strobe lighting and alert systems will immediately be triggered when an incident or incursion occurs. CCTV is mounted on the Smart Tower to capture and record the incident in high definition and real-time. Handheld remote control fobs are fitted with a button to disarm the system temporarily if a known works vehicle is entering the site. There is also a panic button to alarm the workforce of an incident.

VPS PATENTED SOLUTION

Mobile CCTV Tower

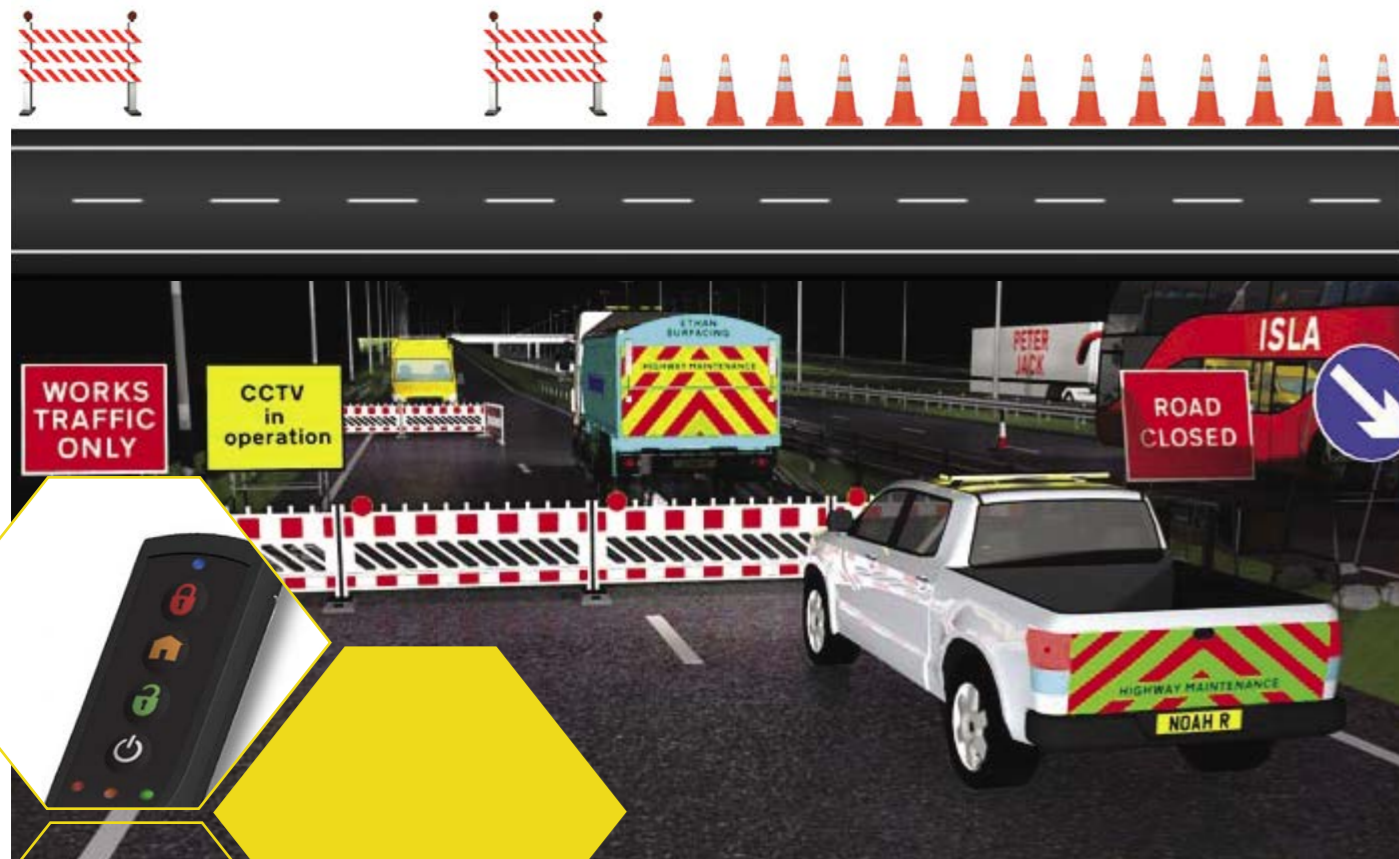
- HD Analytic camera
- Infra-Red night vision
- Real-time HD recording
- Audio recording
- Linked to project wide alert and evacuation system

VPS ALERT SYSTEM

- Alert system deployed on cones
- 100 db siren and flashing strobe
- Emergency Manual Call Points
- Radio network to cover unlimited distances

KEY BENEFITS

- Easy to deploy by contractor staff - no special vehicles needed
- Visible deterrent
- Data capture to inform future strategy
- Enhanced risk mitigation
- Optimal value within industry



INCURSION CAMERA SOLUTION

Mobile CCTV Tower

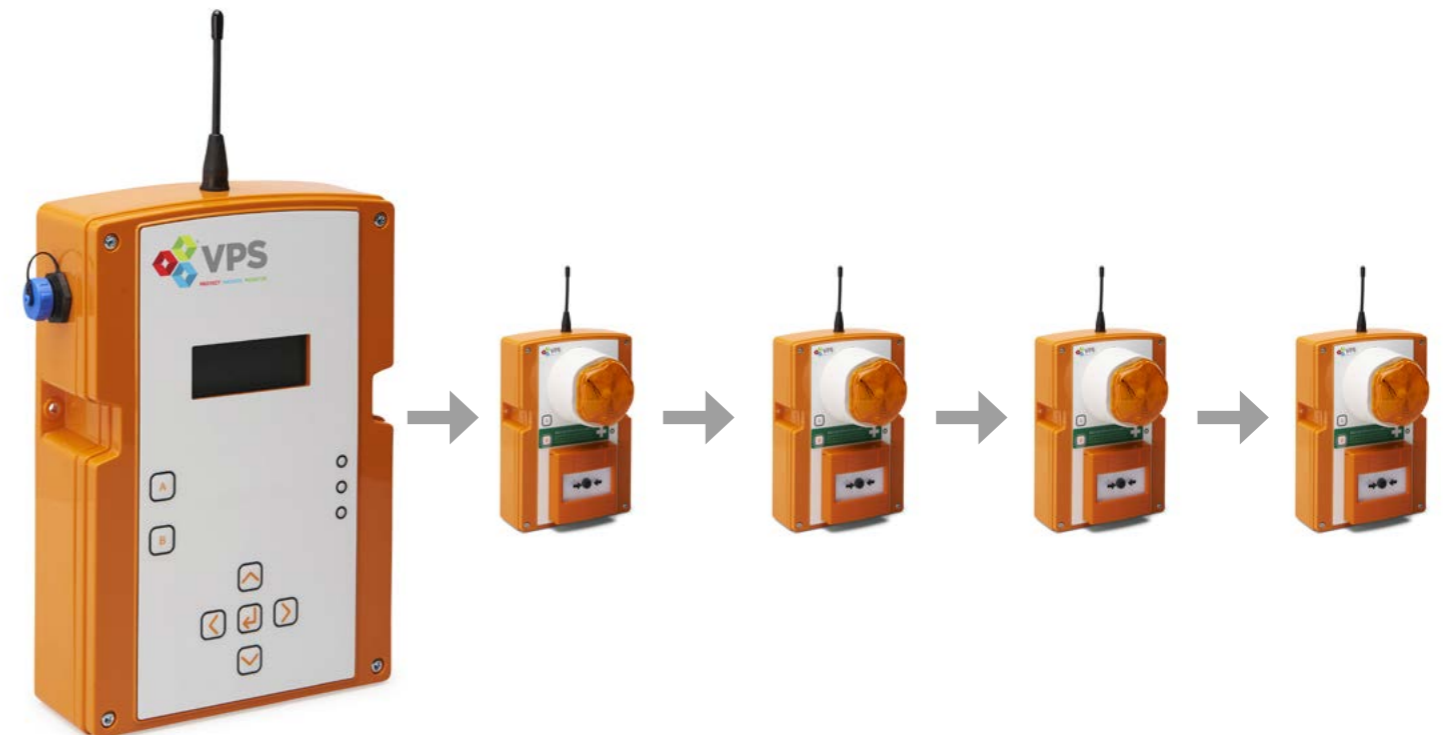
- Battery Powered Analytic CCTV system with LED IR illumination for night vision
- Real-time CCTV HD recording with ANPR capture
- Audio recording
- Can be interlinked with on-site monitoring and/or third party monitoring
- Radio key-fob for arming and disarming the system with LED status display / Panic alarm
- Event Log offering 2000 events
- Long duration battery 168Hrs with remote monitoring on status
- Integrated with battery powered sounders, strobes and emergency call points using a radio mesh 1km distance per device with 3 year battery life
- Polling across devices ensure any system failures can be detected 24/7/365
- Planned and reactive maintenance 24/7/365
- Remote support 24/7/365
- Optional Solar for long term deployments

CE Accreditation

- Remote monitoring in an approved BS5979 central station for special projects - I.e
- Taper Impact Alarms or Unmanned Closures

VPS Alert System

- Base station deployed on Tower or within TM vehicle
- Individual call points interlinked by radio mesh network
- Design reduces false alarms and associated cost/delay
- Audio warning and flashing strobe for immediate alert and evacuation
- Each manual call has a radio repeater with a range of up to 1000m - Unlimited distance and unlimited number of units
- Text/Email notification of any event to site management and monitored loop
- 3 year battery life for service certainty and reduced maintenance
- Polling, Tamper and Low Battery Alerts upon failure



VIRTUAL JOURNEY TIME SOLUTIONS

TECHNOLOGY FOR SMARTER HIGHWAYS

The VPS Virtual Journey Time System (VJTS) is a first of its kind solution to the issue of journey time. VJTS is live, flexible and reactive and perfect for incident management, events and large infrastructure schemes. By eliminating the need for hardware, deployment costs are saved, delays in procurement are reduced and there is no risk to road worker safety.

VJTS also allows infinite flexibility when compared to a hardware solution using ANPR or Bluetooth, and by using crowd sourced data, it allows the creation and amendment of routes with an associated journey time being immediately available.

No time lag, no nonsense. Clear and accurate information presented to drivers in a timely manner will improve the overall network experience for motorists.

Key Benefits

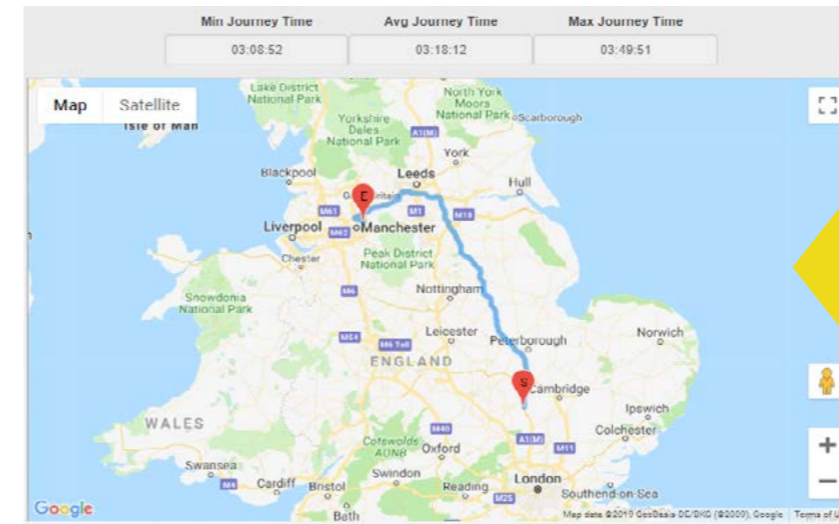
- Influence driver behaviour by managing, monitoring and easing congestion
- Help maximise network resilience planning and response
- Improve highway worker and driver safety
- Save time and reduce costs
- Provide a more sustainable solution

More Virtual Applications

- Full wireless ITS integration through cloud software
- Network queue detection for display & monitoring
- Average speed calculation



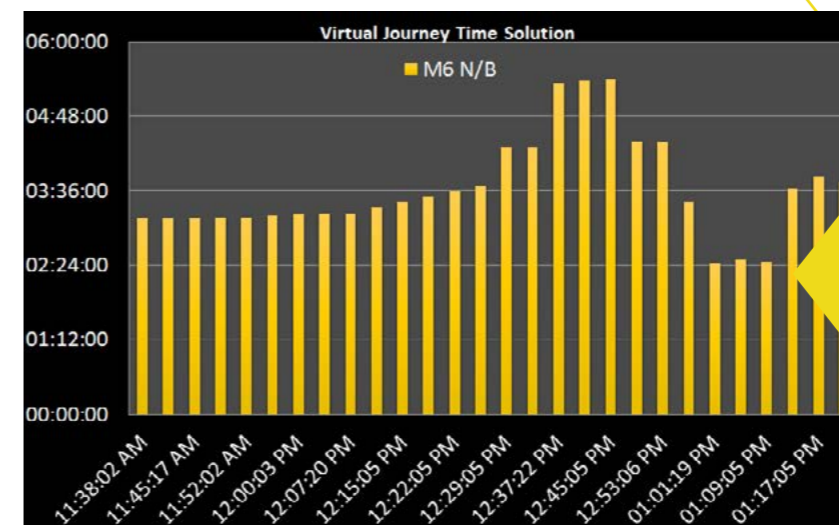
VJT DATA SHEET



Easy route configuration and editing via Google mapping

M6 Northbound - Average Speed Data					
Timestamp	Tenant	Route	Distance Miles	Duration MM:SS	MPH
14/03/2019 16:31	VPS	M6 N/B	2.5	6:47	22.1
14/03/2019 16:27	VPS	M5 J1-J2 S/B	2.5	6:33	22.9
14/03/2019 16:23	VPS	M5 J1-J2 S/B	2.5	6:32	23.0
14/03/2019 16:19	VPS	M5 J1-J2 S/B	2.5	5:43	26.2
14/03/2019 16:15	VPS	M5 J1-J2 S/B	2.5	5:22	28.8
14/03/2019 16:12	VPS	M5 J1-J2 S/B	2.5	5:28	27.8
14/03/2019 16:08	VPS	M5 J1-J2 S/B	2.5	5:27	27.9
14/03/2019 16:04	VPS	M5 J1-J2 S/B	2.5	5:33	26.8
14/03/2019 16:00	VPS	M5 J1-J2 S/B	2.5	5:34	26.5
14/03/2019 15:56	VPS	M5 J1-J2 S/B	2.5	5:40	26.5
14/03/2019 15:52	VPS	M5 J1-J2 S/B	2.5	5:19	28.2
14/03/2019 15:48	VPS	M5 J1-J2 S/B	2.5	5:33	27.0
14/03/2019 15:44	VPS	M5 J1-J2 S/B	2.5	5:45	26.1
14/03/2019 15:40	VPS	M5 J1-J2 S/B	2.5	5:37	26.7
14/03/2019 15:37	VPS	M5 J1-J2 S/B	2.5	5:36	26.8

CSV file download for Excel



Data graphs designed & edited using Excel

SMARTSENSOR HD RADAR

TECHNOLOGY FOR SMARTER HIGHWAYS

Smart traffic depends on accurate, reliable data. SmartSensor HD is the only vehicle detector that provides all the data you need, including per vehicle speeds, vehicle counts, average speed, 85th percentile speed, occupancy and more.

The non obtrusive side fired radar is positioned at the side of the highway, capturing highly accurate data. The digital wave radar is the only radar designed from the ground up for traffic applications. Other features include dual radar, because two radar beams are better than one.

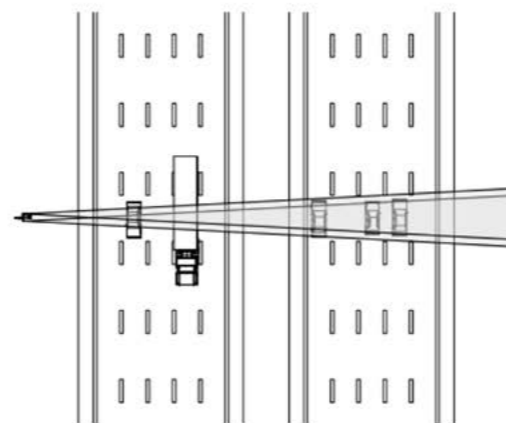
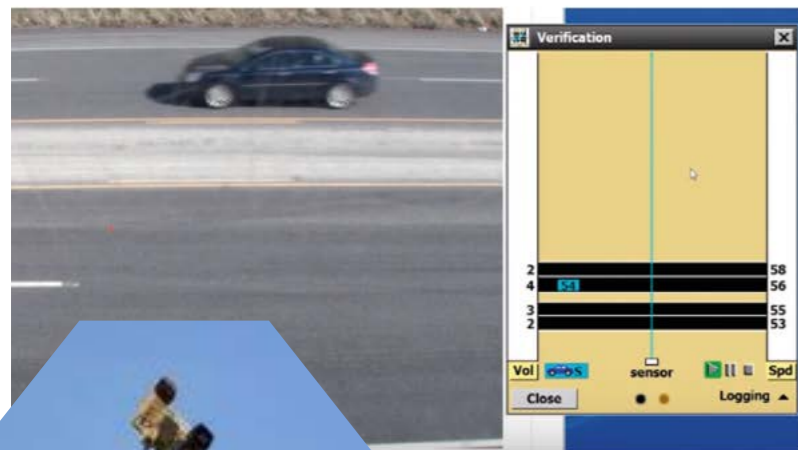
This can be mounted on to the VPS Smart Tower for long or short term duration.

Key Benefits

- Non obtrusive Side fired radar (positioned at the side of the road)
- High Definition Radar (accurate capture of true data)
- Digital Wave Radar (the only radar designed from the ground up for traffic applications)
- Dual Radar (two radar beams are better than one. Twice as good)
- True Coverage (why use multiple devices when one works better?)

Key Features

- Per vehicle speeds
- Vehicle counts
- Vehicle classification (Length based)
- Average speed
- 85th percentile speed
- Headway
- Gap



SSHD DATA SHEET

Key Features

- Detects up to 22 lanes of traffic
- Reports the speed, length and classification of individual vehicles
- Works over barriers, guardrails, medians and gores
- Accurately detects lane-changing vehicles
- Patented Digital Wave Radar II™ technology
- Patented auto-configuration process
- Features Flash upgradeable
- Integrates with Wavetronix Click products
- Requires no tweaking or tuning
- All-weather, all-condition performance
- No performance variance due to temperature
- Flash memory protects data storage
- Automated manufacturing process
- Easy to install and operate
- Remotely accessible for easy management

Measured Quantities

- Per-lane interval data: volume, average speed, occupancy, classification counts, 85th percentile speed, average headway, average gap, speed bin counts, direction counts
- Classification bins: 8
- Interval speed bins: 15
- Per-vehicle data: speed, length, class, lane assignment, range
- Presence data in 22 lanes Detectable Area Number of lanes: up to 22
- Detection range: 6 to 250 ft. (1.8 m to 76.2 m)
- Any lane spacing is supported
- Detection over barriers is supported

Physical Properties

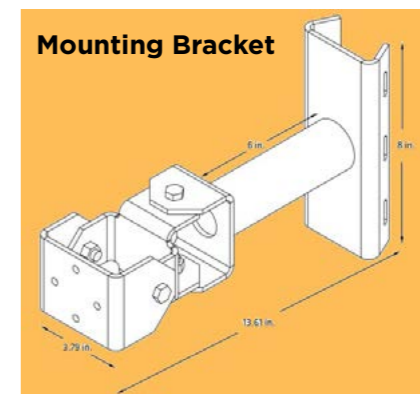
- Weight: 4.2 lbs. (1.9 kg)
- Physical dimensions: 13.2 in. x 10.6 in. x 3.3 in. (33.5 cm x 26.9 cm x 8.4 cm)
- Resistant to corrosion, fungus, moisture deterioration, and ultraviolet rays
- Enclosure: Lexan polycarbonate
- Outdoor weatherable: UL 746C, IP66 rated
- Watertight by NEMA 250 standard
- Withstands 5-ft. (1.5-m) drop
- Housing withstands wind loads exceeding 120 mph
- Connector: MIL-DTL-26482
- Event data for each detection:
 - Sensor ID
 - Timestamp
 - Lane assignment
 - Speed
 - Length
 - Class
 - Range

Data Protocols

- Protocol support for interval, event, presence
- Data protocol document available free of charge
- Interval data for each lane:
 - Sensor ID
 - Timestamp
 - Volume
 - Average speed
 - Occupancy
 - Classification counts
 - Speed bin counts
 - Direction counts
 - Average headway
 - Average gap
 - 85th percentile speed
- Presence data for each lane:
 - Sensor ID
 - Per-lane presence

Power

- Power consumption: 7.6 W
- Supply voltage: 10-28 VDC



BRIDGE STRIKE PREVENTION

TECHNOLOGY FOR SMARTER HIGHWAYS

OVER HEIGHT DETECTION

A pair of 'Electronic Goal Posts' mounted onto VPS Smart Towers, detect over height vehicles on diversion route near any potential bridge strike locations. Variable Messaging Signs are automatically triggered, displaying **Warning Low Bridge - STOP**

Over Height Vehicle (Bridge Strike Detection)

- Installation of 2 sets of electronic goal posts
- VMS warning signage when over height vehicle detected
- Easily deployed by Traffic Management Operatives (TMO's)
- TMO's can receive an alert via SMS upon a trigger with the appropriate over height vehicle direction
- On site TM team will control a set of temporary traffic lights to prevent strike and turn vehicle around

Features & Benefits

- Easily deployed using the VPS Smart Tower
- Mounted & Powered using the VPS Smart Tower
- Messages displayed on our VMS units
- Bridge strike incidents can cause death or serious injury to road and rail users and are financially costly to the vehicle owner and the railway

Applications Include

- Bridge Strike Detection
- Traffic management diversion protection
- Work Zone structure protection

OVER HEIGHT DETECTION SPECIFICATION

Benefit from the added protection with over-height vehicle detection. The Over-Height Vehicle Detection System (OVDS) offers a proactive solution for owner / operators that want to actively monitor traffic on routes where overhead obstructions pose a strike risk, and provide strike warnings to drivers of vehicles that are too large.

The system uses laser sensors to monitor traffic on approach to obstructions such as tunnel entrances, low overpasses and bridges. If a vehicle is too large to pass safely, it is detected, triggering a remote warning sign placed further along the route and an audible alarm that instructs the driver to alter their course or stop before they reach the obstruction.

Smart Tower Specification

Power options - Mains (90-305V AC), 24VDC, battery, hydrogen, fuel cell or generator
Operating power - 135W
Backup power (UPS) - Up to 15 hours
UPS charge time - Less than 7 hours via mains
Tower weight - 295kg
Base size - 1m x 1.1m
Base size with stabilisers - 1.5m x 1.5m
Tower height delivered 3.2m
Tower height operational - 7.5m Max
Operating temperature range - -10°C to +40°C
IP rating - IP65
Wind loading - 110mph

Low Speed VMS Specification

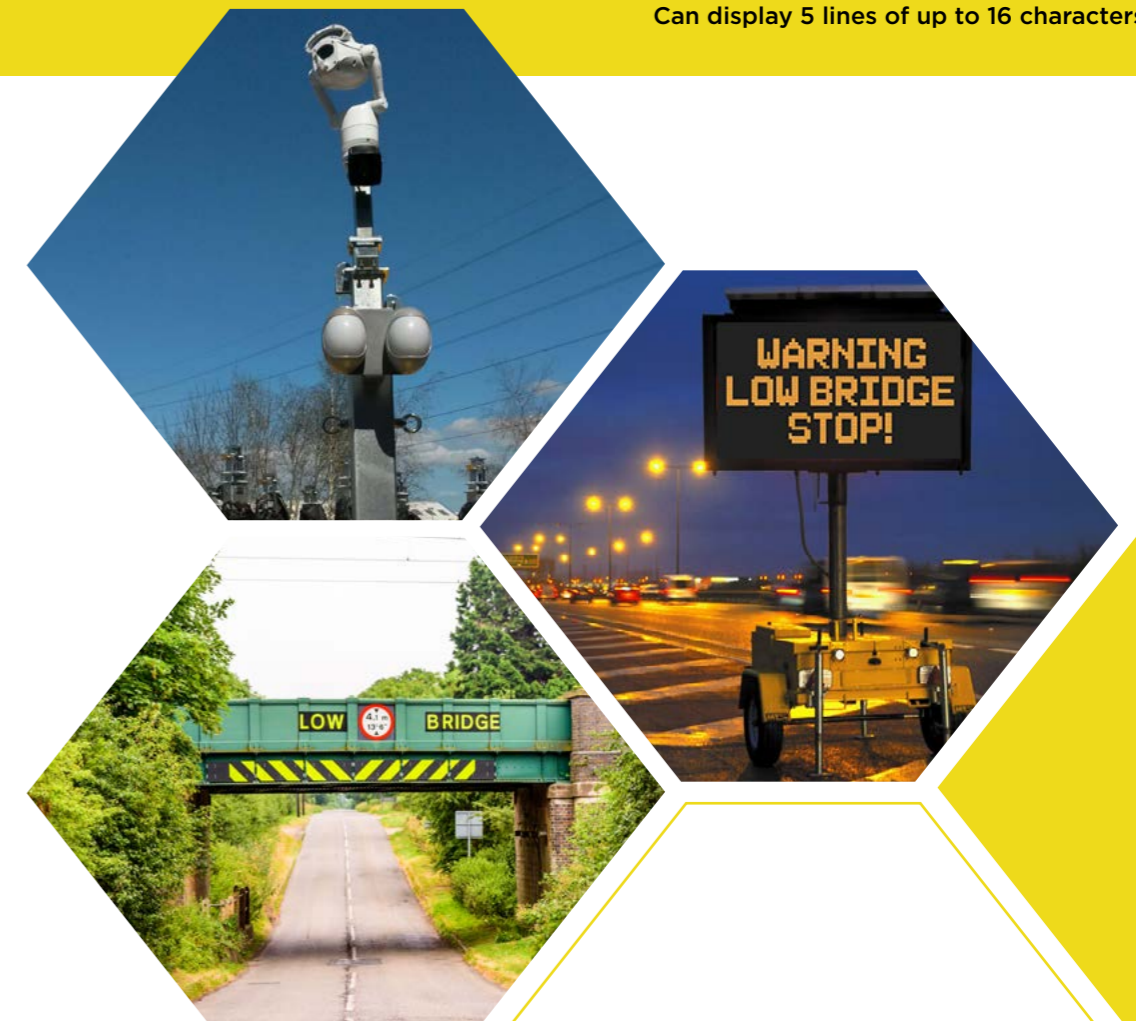
Operating Height	3490mm Max
Travel Height	2387mm (+/- 12mm)
Length	2067/2626mm
Width	1600mm
Weight	750

High Speed VMS Specification

Operating Height	4130mm Max
Travel Height	1855.91mm
Length	4490.46mm
Width	2019.30mm
Weight	1800kg

VMS Display

Can display 5 lines of up to 16 characters



CCTV FOR WORKZONE & HIGHWAY MONITORING

TECHNOLOGY FOR SMARTER HIGHWAYS

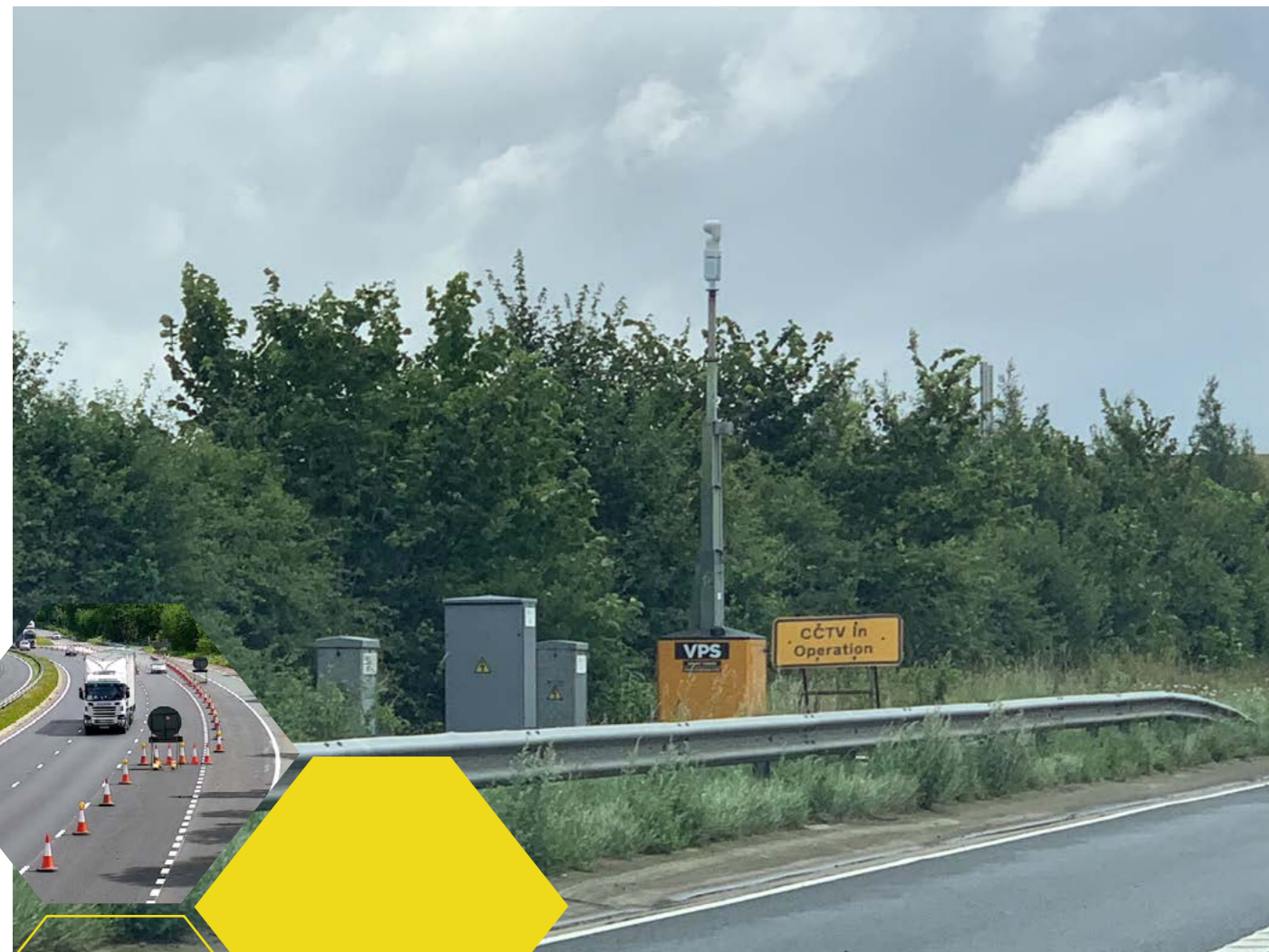
VPS workzone and highway monitoring solution, utilises the latest CCTV cameras mounted on our Smart Towers. This allows us to have a fully integrated, rapidly deployable solution. Our Smart Tower mounted CCTV systems are quickly installed, repositioned or removed, which is ideal for all long or short duration highway projects.

Our mobile CCTV cameras use wireless 3G/4G or radio communications, which eliminates the use of network cabling, resulting in quicker installation times and less video outages during operation.

The systems are predominantly powered directly from the highway feeder pillars, however they can also operate using batteries with solar recharge, Hybrid Diesel or Solar Battery Units, making the whole system fully autonomous. Smart Towers come complete with battery back incase of power failure. This allows us to maintain monitoring if power loss occurs, until our engineers attend site.

Our fully modular system allows us to choose the right camera for the right location. Using the latest high definition PTZ cameras they can see and record clear high quality images.

Camera operation and images can be controlled on site or fully managed/monitored remotely via our Remote Video Recording Centre (RVRC)



BENEFITS OF CENTRAL MONITORING VIA OUR RVRC

Our category II (BS5979 compliant) Alarm Receiving Centre and Remote Video Recording Centre is located in our Head office complex in Chadderton. Much more than the industry standard 'control centre' our RVRC benefits from the latest technological advancements, enhancing efficiency and capabilities, and is at the centre of our security operation. Operating on a 24/7 basis with an experienced Shift Manager and duty personnel present at all times, the centre supports operational management teams with monitoring and responding to alarms, video signals, live feeds and lone worker management.

There is a Duty Manager on duty at all times, all operatives are SIA licensed for Public Space Surveillance, and the centre is supported by robust business continuity with disaster recovery plans in place. These are tested annually via desktop exercises with policies and procedures in place to guarantee uninterrupted service delivery.

Where appropriate we use a number of video analytic solutions to drive operators behavior and bring attention to Highways incidents.



Utilising our RVRC to monitor the live traffic feed helps deliver the following operational benefits to the customer:

- Single operator supported by our core staffing levels during breaks. No additional operatives needed, resulting in project savings
- All operators are fully licenced for Public Space CCTV and so is VPS as we hold SIA Approved Contractor Scheme (ACS) accreditation
- Facility is approved to BS5979 with resilience across all our architecture and infrastructure, with no risk of outages
- Operator can be supported by supervisors and senior management during incidents
- Operators will be rotated across various desks every few hours to maintain observation levels
- GDPR compliant
- Operators can monitor multiple projects, so we can scale without the need for additional heads every time, resulting in economies of scale
- Reduction of carbon footprint on site with removal of dedicated cabin and power requirement
- Standardisation of processes across all projects
- Short term projects (days or weeks) can be easily supported
- Emergency same day can be connected
- VMS signage can be controlled by the monitoring station team 24/7/365 to react to incidents
- High quality facility with high retention of staff
- No fibre on the network or civil works needed reducing H&S risks as installers will spend less time on the highway
- No risk of damaged fibres which can result in communication problems
- No working at height as our solution are telescopic
- Many short term projects don't have a local compound to facilitate a CCTV monitoring location





Accreditations



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