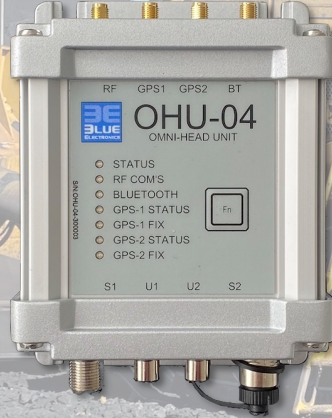# Mobile Plant Collision Awareness Detection System (CAS/SCAS/PDS)

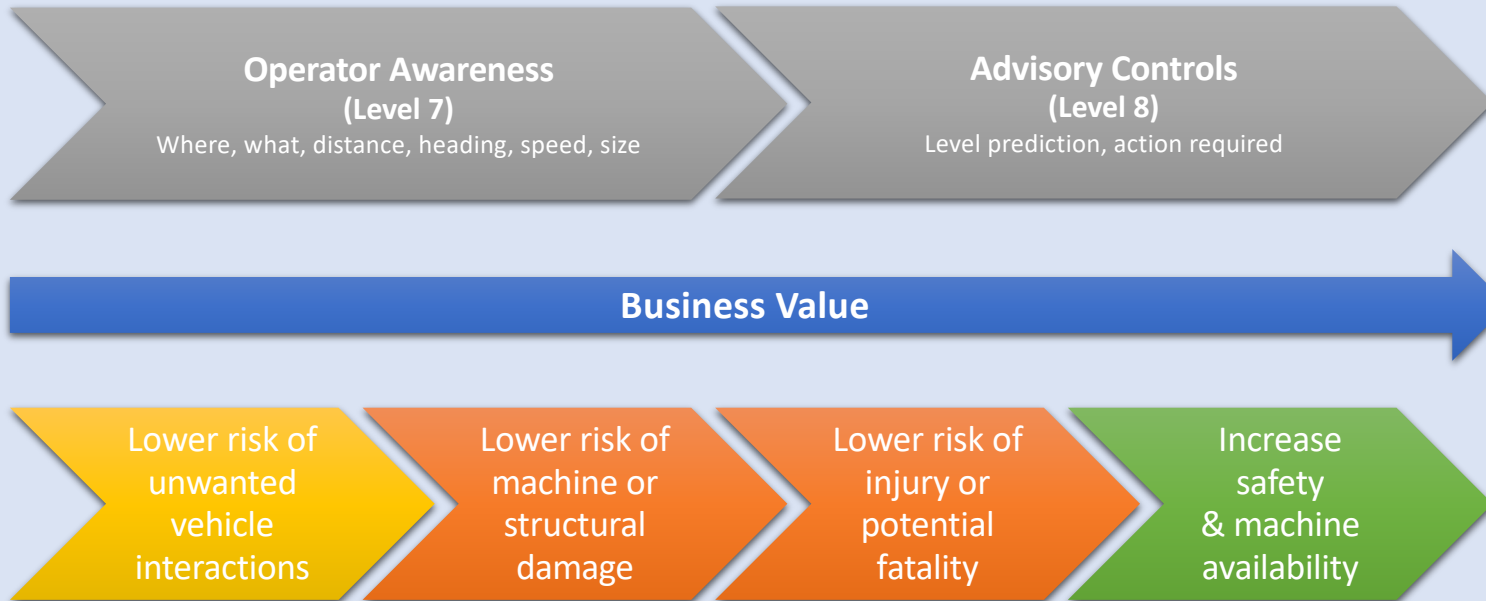## Improving Mobile Plant & Stockpile Management Safety

What it does…

The Blue Electronics Collision Awareness & Proximity Detection System is a GPS based system that provides both visual and audible warnings for mobile plant and vehicle operators if they enter one another's detection zones or the zones of objects like structures, conveyors or underground feeders or valves.

- ✓ GPS based

- ✓ Designed for mobile plant and vehicles

- ✓ Has configurable warning & alert zones

- ✓ Provides visual and audible alarms

- ✓ Logging

- ✓ Remote maintenance & monitoring (optional)

- ✓ Corrected GPS (RTK) for improved accuracy (optional)

- ✓ Not difficult to installation

Vehicle Interaction System (EMESRT-PR5)

The technologies provides alerts / alarms (Via Audible / Speech / Visual) to enhance the operator ability to predict a potential unsafe interaction and the corrective action required

Operator Awareness (Level 7) Where, what, distance, heading, speed, size	Advisory Controls (Level 8) Level prediction, action required

Business Value →

Lower risk of unwanted vehicle interactions	Lower risk of machine or structural damage	Lower risk of injury or potential fatality	Increase safety & machine availability

What's required…

Each item of mobile plant is fitted with the following hardware:

- Operators Control Panel (OCP)
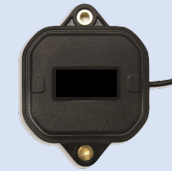
- Omni Head Unit (OHU)

- RF & 2xGPS Antennas

| OCP | OHU | RF | GPSx2 |

Operators Control Panel (OCP)...

The OCP is mounted inside the operator's cabin within reach and view of the operator.

✓ IP40 7" Colour Touch Screen with RAM Ball Mount

✓ Adjustable Screen Brightness with auto or manual day/night mode

✓ Adjustable volume

✓ Points of Interest Warnings

✓ Geofence Warnings (Structures etc.)

✓ Supports multiple RTK Base Stations

✓ Customisable (mp3) Alarm files

✓ Event and Alarm Logging

✓ Ethernet, RS485 & CAN Bus communications

✓ Local or Remote updating

✓ 12-24Vdc

OCP

Omni-directional Head Unit (OHU)…

The OHU can be mounted inside the operator's cabin or outside in a suitable enclosure.

✓ Compact EMC/EMI IP56 rated surface mount enclosure

✓ LED Status Indication with auto off to avoid operator distraction

✓ Licenses free 900Mhz radio (M2M, M2P Communication)

✓ Dual Precision GPS receivers (+/-2.5m , +/-20mm assisted)

✓ Configurable object profile settings

✓ Configurable overspeed setting

✓ Configurable warning & alert settings

✓ Wifi, Bluetooth, RS485 & RS232 communications

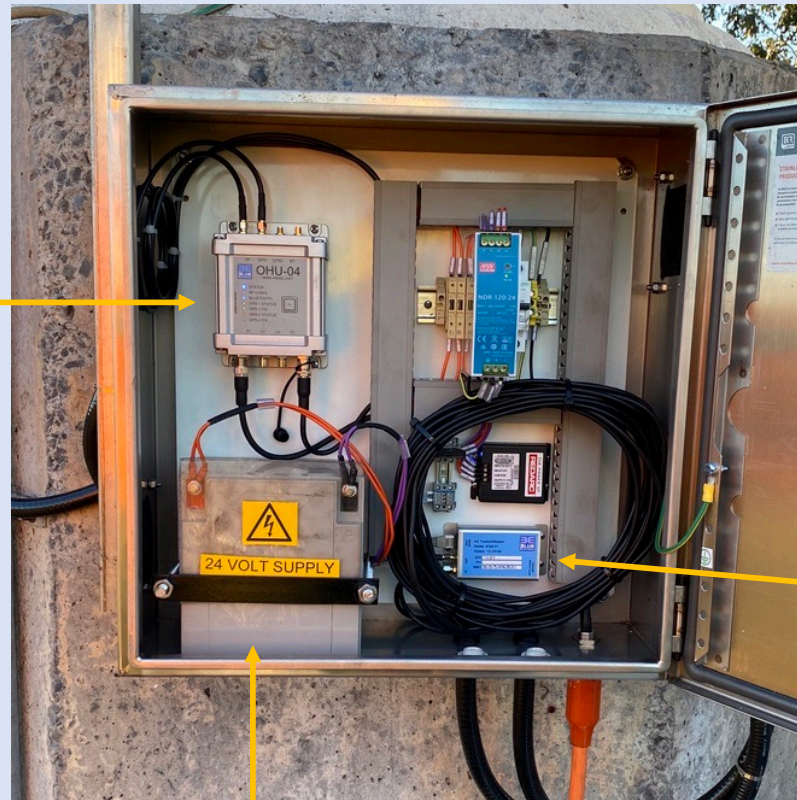✓ Assignable I/O (2DI, 2DO)

✓ Local or Remote updating

✓ 12-24Vdc

OHU

Typical Fixed Base Station

OHU-04
- **Precision GPS**
- **Radio Transceiver**
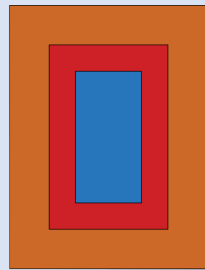- **Modbus RTU Master**
- **RTK Base Station**

Remote Monitoring
- **3/4/4Gx Modem**

Mains/Solar Powered, Battery Backed

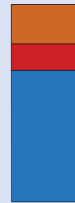# Typical types of detection zones...

The size of the detection zones can be adjusted enabled or disabled to suit the application.
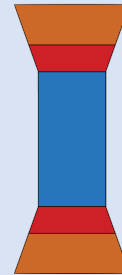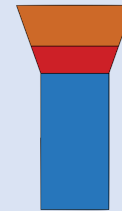

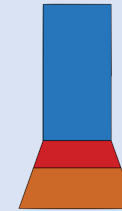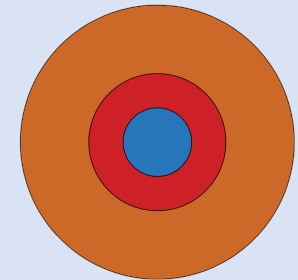
| Uniform | Front & Rear | Front only | Back only | Splayed Front & Rear | Splayed Front only | Splayed Rear only | Circular |

What the Operators sees...

Stockpile application shown

Coal Valves

Dozer

Height

Radio

GPS

Accuracy

Heading

Stacker

Alarm Ack. Button
(press to acknowledge alarms)

In Cabin Button
(Used with Personal Devices)

Zoom Button
(press to zoom in/out)

Stockpile Overview
(press to display coal valves)

Next Page
(press to see next page)
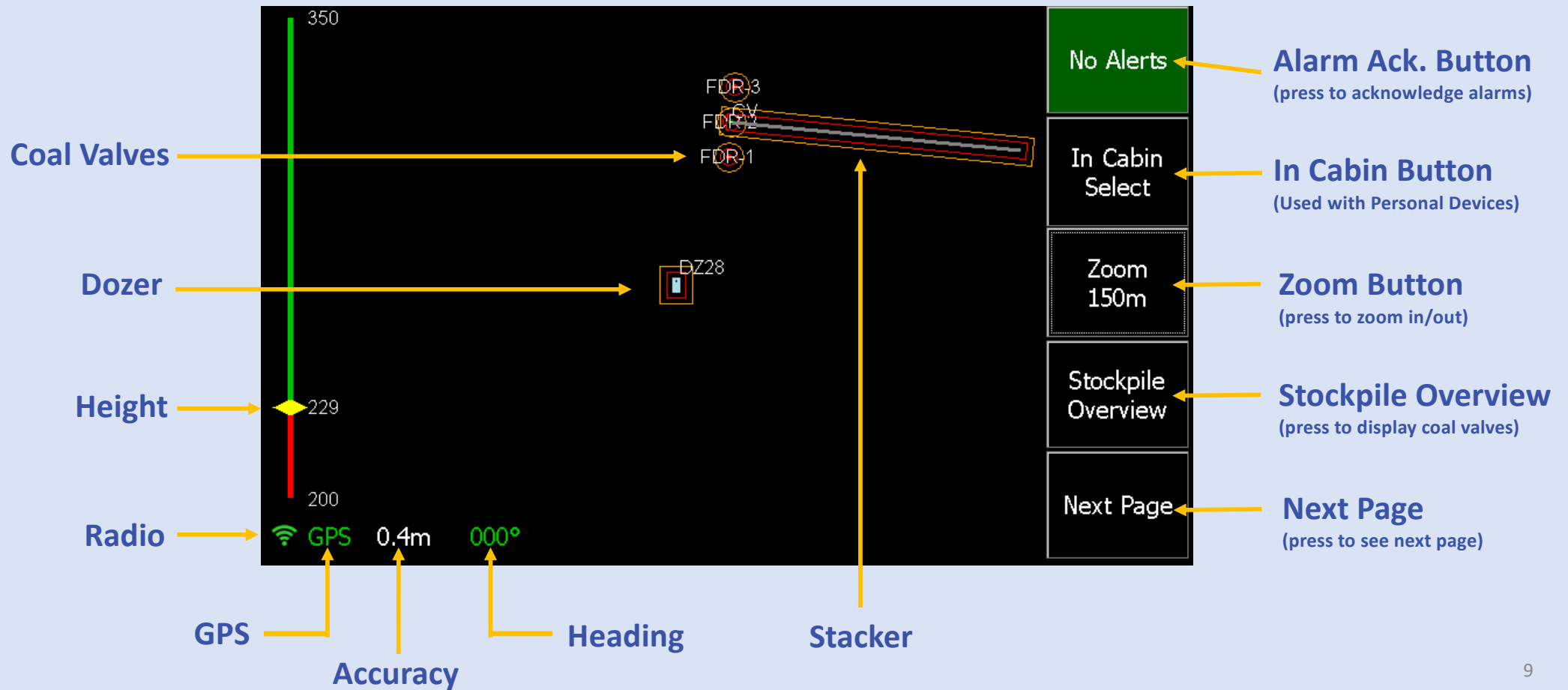
Typical Coal Valve & Stacker Display…

Stacker/Conveyor

- **Configurable zones**
- **Can be a virtual or dynamic objects**
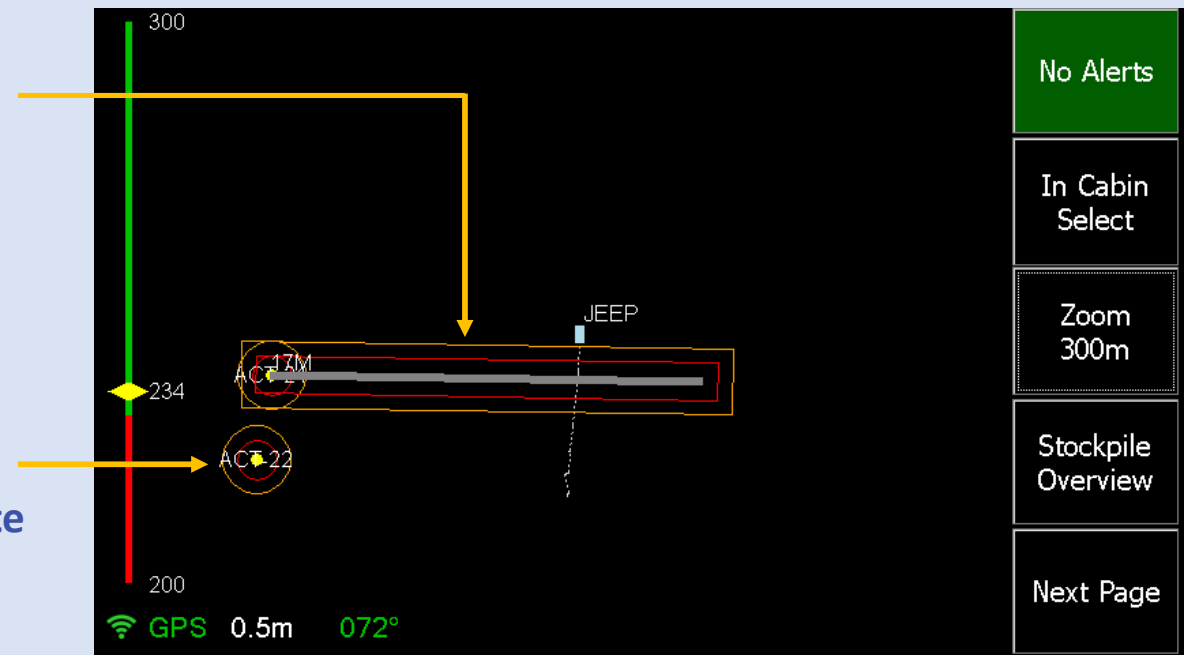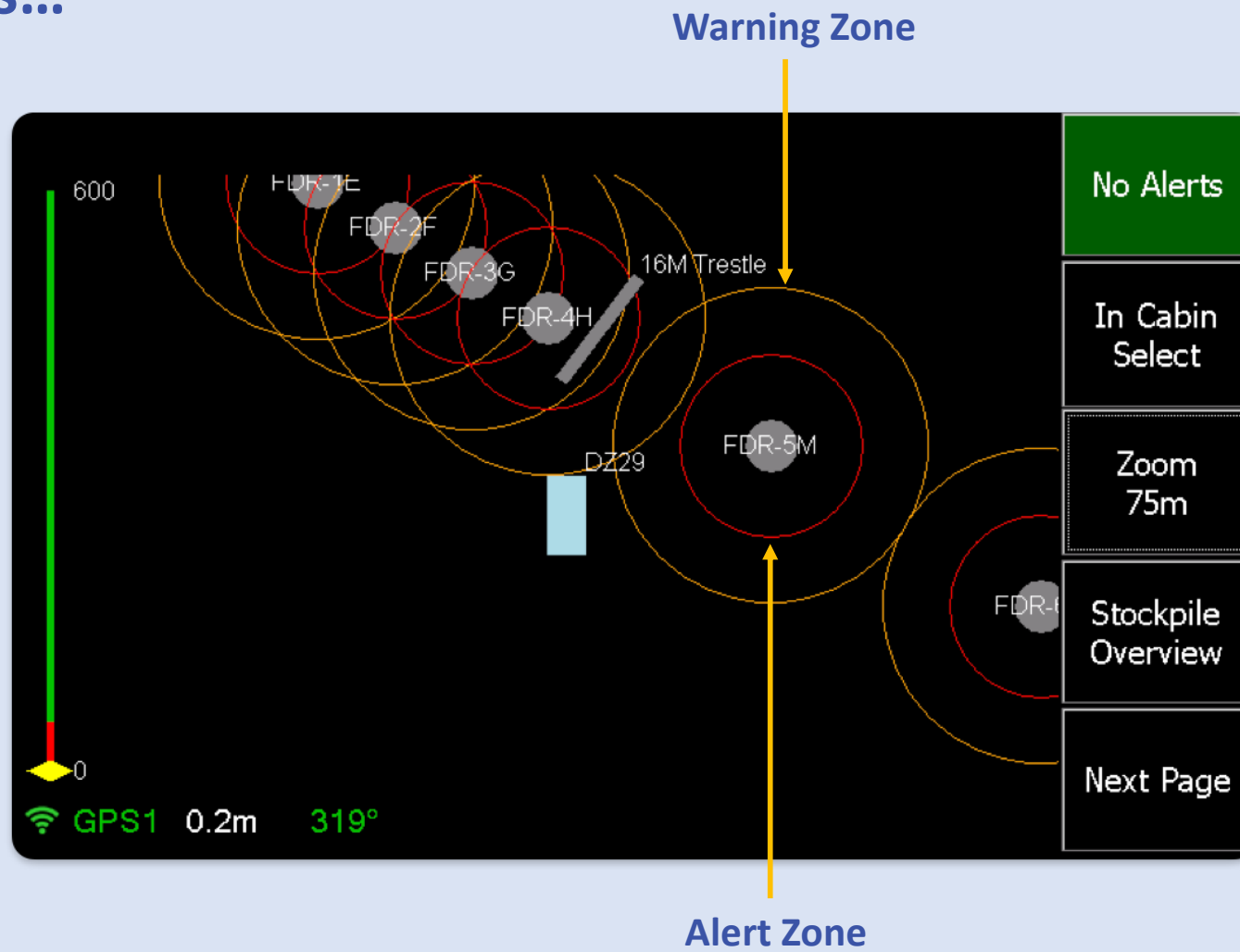- **Adjustable pivot point (ideal for radial stackers)**

Coal Valves

- **Configurable Zones**
- **Grow depending on Dozer Altitude**
- **Adjustable Angle of repose**
- **Valve changes colour depending on state**

Typical Views…

Warning Zone

Alert Zone

11

Typical Views...

Typical Views...

Typical Coal Valve Overview Display...

Supports multiple coal valves or feeders

Valves flash & change colour depending on state

Communications Heartbeat

Supports multiple stockpiles

A Stockpile

FDR-1E
FDR-2F
FDR-3G
FDR-4H
FDR-5M
FDR-6N

M4 Product Stockpile

ACT-21
ACT-22

OCN Product Stockpile

FDR-1
FDR-2
FDR-3

Timeout: 120s

Heart Beat

0

Exit Page
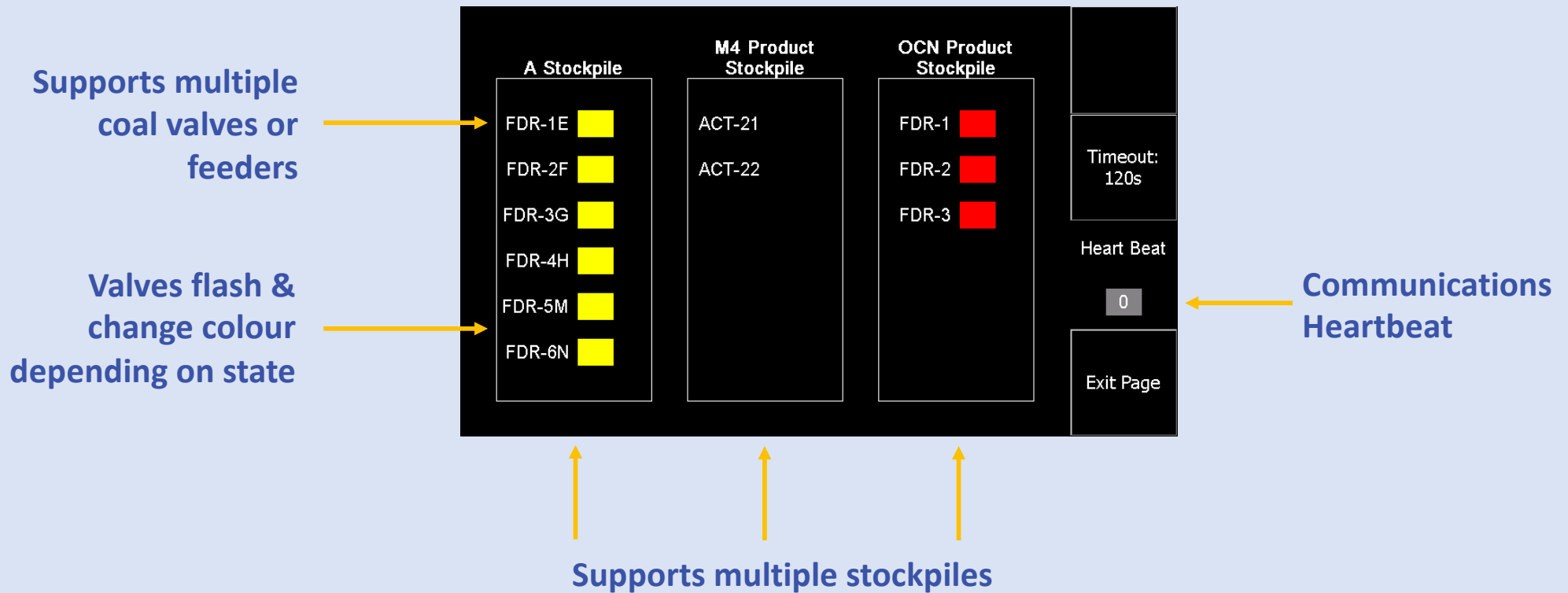
Typical Base Station Installation Photos…
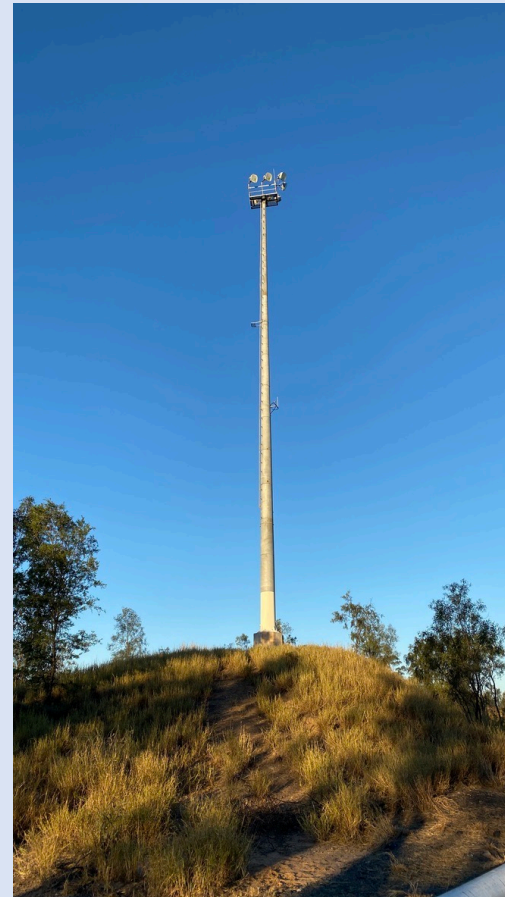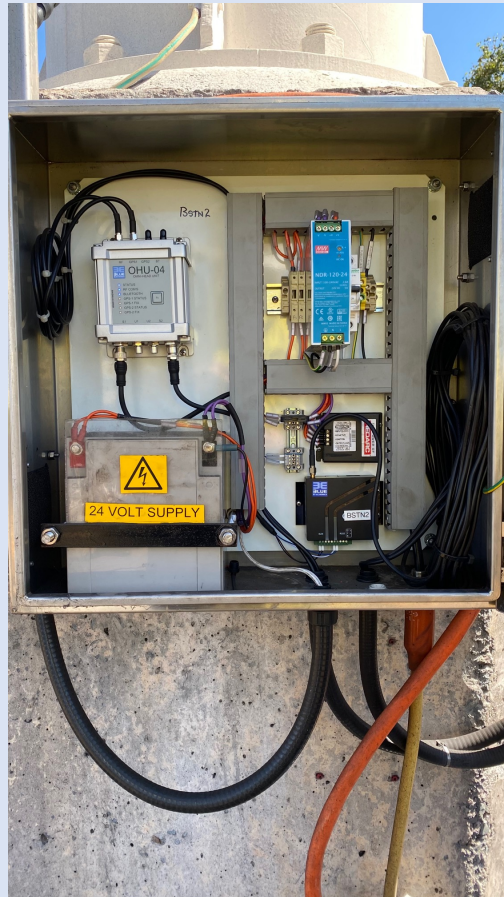
Typical Stacker Installation Photos...

Typical Dozer Installation Photos…

What it can be used on…

The system can be fitted to almost any type of mobile plant including:

- Dragline
- Excavator
- Shovel
- Dump Truck
- Loader
- Dozer
- Grader
- Service Truck
- Water Cart
- Crane
- People Carrier
- Light Vehicle

- Rail Maintenance Machine
- Hi Rail Vehicle Lighting Plant
- Generator
- Drilling Rig
- Stacker/Reclaimers on Stockpiles
- Etc.

Types of Alarms…

The system can provide both visual and audible warnings for the following situations:

✓ Breaching a Warning Zone

✓ Breaching an Alert Zone

✓ Overspeed

✓ Entering or Leaving a Geofenced area

✓ Approaching a virtual hazard i.e., Warning or Information sign, Restricted area, Powerline crossing, Conveyor, Coal Valve etc..

Remote Maintenance…

The system can be remotely maintained from your desktop using our Device Manager Software and our Remote Maintenance Gateway.

- ✓ Check & update software versions

- ✓ Check & update device settings

- ✓ Download or upload device settings

- ✓ View device location and surrounding device in list or map view

- ✓ Download logs from an OCP

- ✓ Download or upload Geofence or POI files

- ✓ Subscription include NEW feature releases

DEVICE
MANGER
Ver3.0

Typical Remote Gateway Modem

OHU

OHU-04
OMNI-HEAD UNIT

- STATUS
- RF COM'S
- BLUETOOTH
- GPS-1 STATUS
- GPS-1 FIX
- GPS-2 STATUS
- GPS-2 FIX

RF GPS1 GPS2 BT

S1 U1 U2 S2

3/4/4Gx Modem

RUN   RSSI
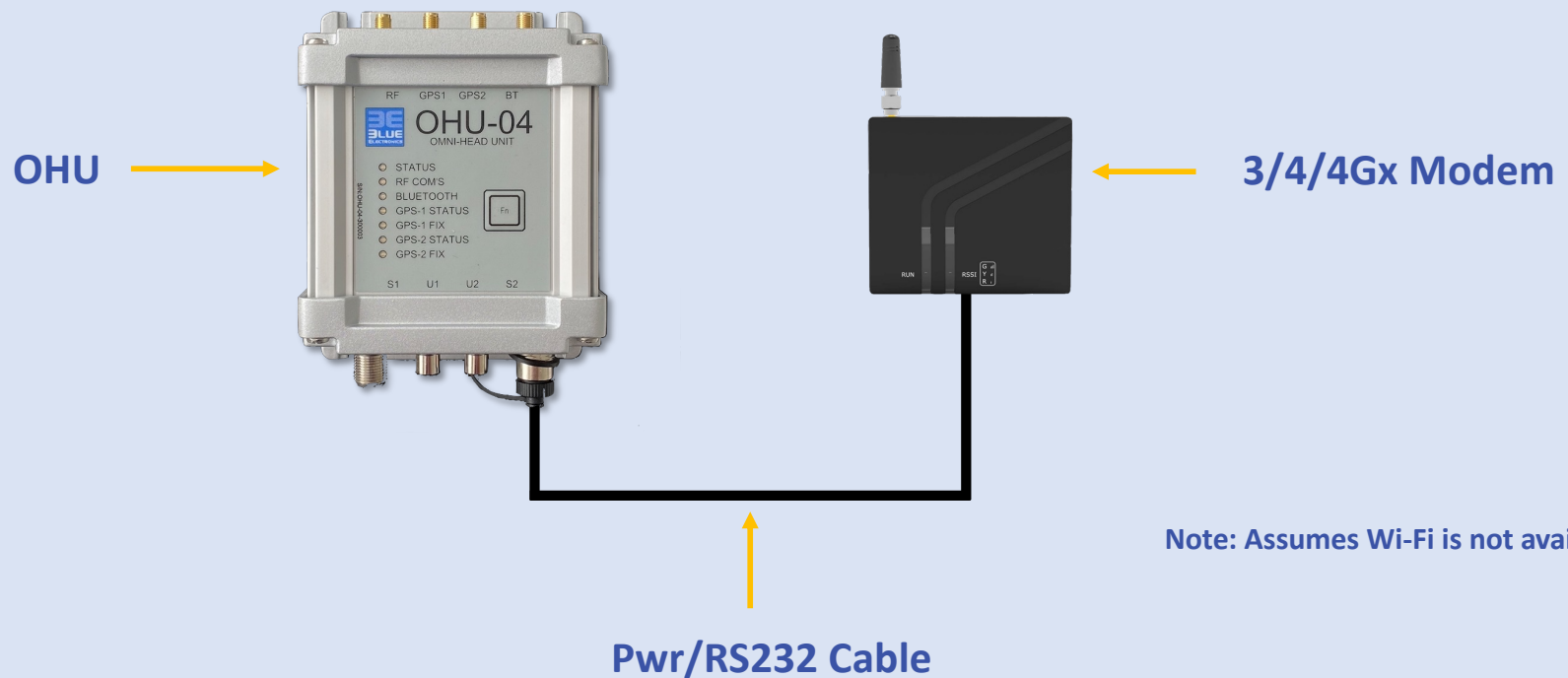
Note: Assumes Wi-Fi is not available

Pwr/RS232 Cable

Remote Monitoring…

The location and status of each machine, worker or pedestrian can be remotely monitoring on our WebPortal.

- ✓ Google Maps Web based monitoring system

- ✓ Monitor device location in near real time on desktop or mobile devices

- ✓ Create Reports available online or via scheduled Email

- ✓ Create Events and get safety breaches via SMS or Email

- ✓ Replay track history or download for external evaluation

- ✓ Create geofences & POI

- ✓ Configure plant groups and workspaces

- ✓ Supports 3rd party Trackers

- ✓ Subscription include NEW feature releases
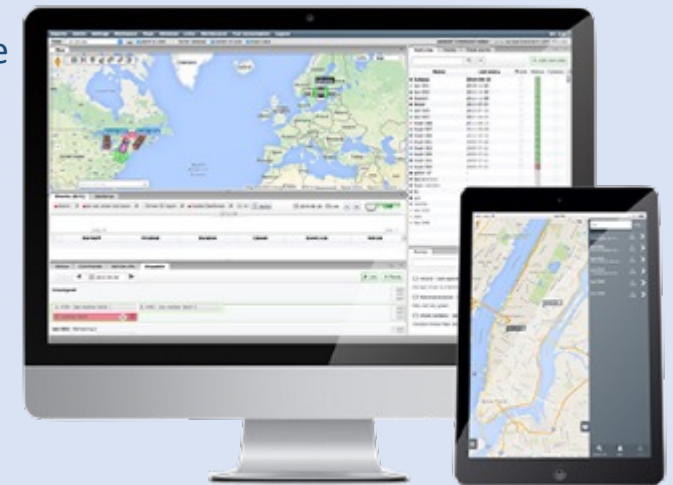
RTK Corrected GPS…

If you need a higher precision for working across multiple tracks, lanes or designated work sites, then we can provide RTK correction using either our fixed Base Station or the AllDayRTK service which operates the highest-density network of Continuously Operating Reference Stations (CORS) in Australia.

Remote Customer Support…

Using Microsoft SharePoint, Remote Customer Support provides you access to the latest product information and software updates all in one location.

✓ Access 24/7 to current product information & software

✓ Keep up to date with product news and technical bulletins

✓ Create your own notifications so you are kept informed when anything changes

Typical installation...

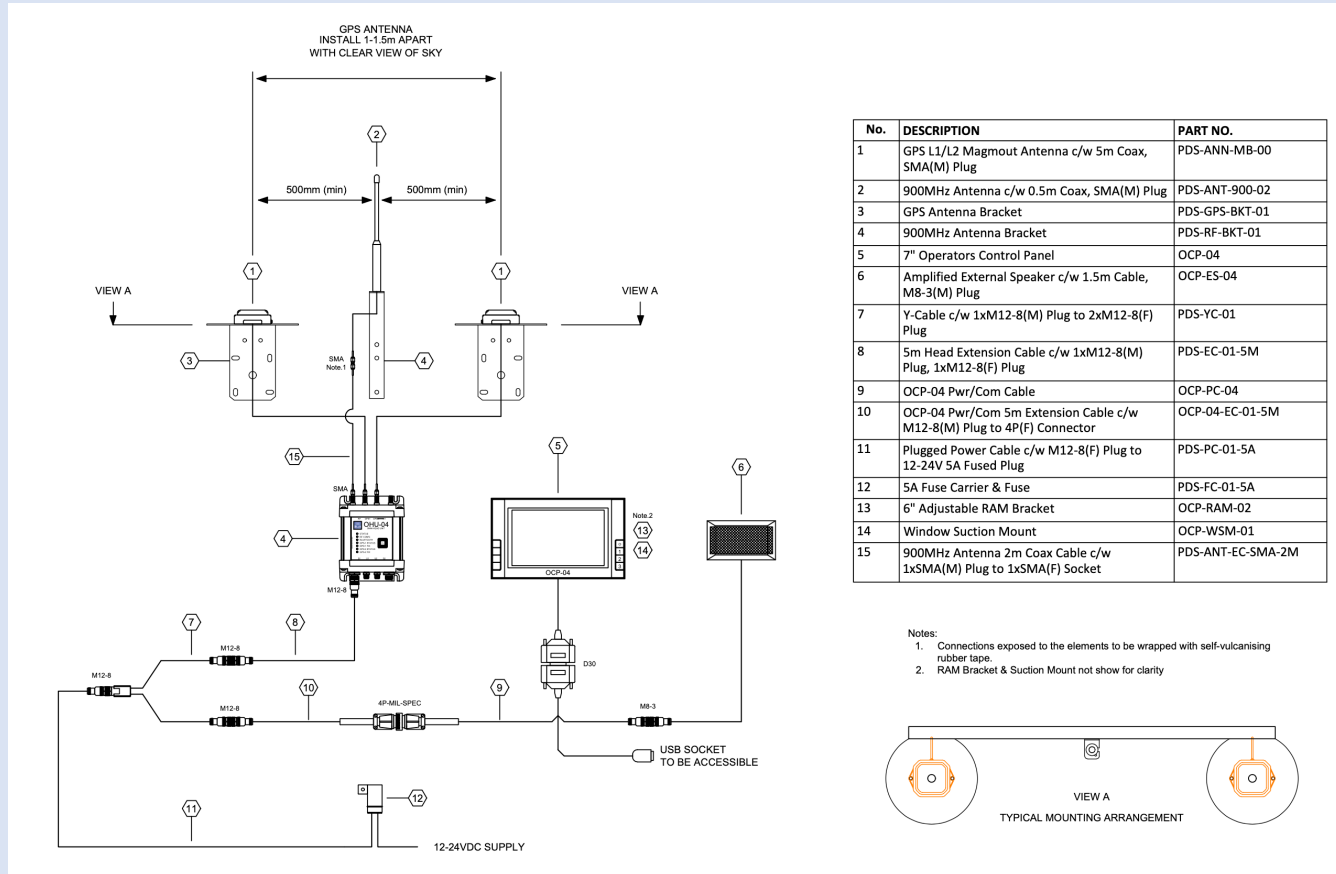| No.	DESCRIPTION	PART NO.
1	GPS L1/L2 Magmout Antenna c/w 5m Coax, SMA(M) Plug	PDS-ANN-MB-00
2	900MHz Antenna c/w 0.5m Coax, SMA(M) Plug	PDS-ANT-900-02
3	GPS Antenna Bracket	PDS-GPS-BKT-01
4	900MHz Antenna Bracket	PDS-RF-BKT-01
5	7" Operators Control Panel	OCP-04
6	Amplified External Speaker c/w 1.5m Cable, M8-3(M) Plug	OCP-ES-04
7	Y-Cable c/w 1xM12-8(M) Plug to 2xM12-8(F) Plug	PDS-YC-01
8	5m Head Extension Cable c/w 1xM12-8(M) Plug, 1xM12-8(F) Plug	PDS-EC-01-5M
9	OCP-04 Pwr/Com Cable	OCP-PC-04
10	OCP-04 Pwr/Com 5m Extension Cable c/w M12-8(M) Plug to 4P(F) Connector	OCP-04-EC-01-5M
11	Plugged Power Cable c/w M12-8(F) Plug to 12-24V 5A Fused Plug	PDS-PC-01-5A
12	5A Fuse Carrier & Fuse	PDS-FC-01-5A
13	6" Adjustable RAM Bracket	OCP-RAM-02
14	Window Suction Mount	OCP-WSM-01
15	900MHz Antenna 2m Coax Cable c/w 1xSMA(M) Plug to 1xSMA(F) Socket	PDS-ANT-EC-SMA-2M

Notes:
1. Connections exposed to the elements to be wrapped with self-vulcanising rubber tape.
2. RAM Bracket & Suction Mount not show for clarity

Basic specifications…

Operators Control Panel:

Display: 7" Colour Touch Screen
OS: MS Windows CE6.0 Professional or Linux
External Speaker: Yes
Mounting: RAM adjustable Bracket
Rating: IP40
System Voltage: 12~24Vdc

Omni-Head Unit:

Accuracy: +/- 1m relative un-assisted +/- 0.02m assisted
Rotational accuracy: 0.3deg
Speed accuracy: 0.05m/s
Range: >5km LOS, <1.5km NLOS
Mounting: Surface
Rating: IP56
Indications: Status, RF, BT, GPS1, GPS1 Fix, GPS2, GPS2 Fix
System Voltage: 12~24Vdc

End - Thank you

Stay Safe

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