

# DEFENCE GROUND VEHICLES

## Advanced Sensing Technologies

### Operator Controls

- Key switch
- Temperature sensor
- Toggle switch
- Pushbutton switch
- Rotary position

### Doors

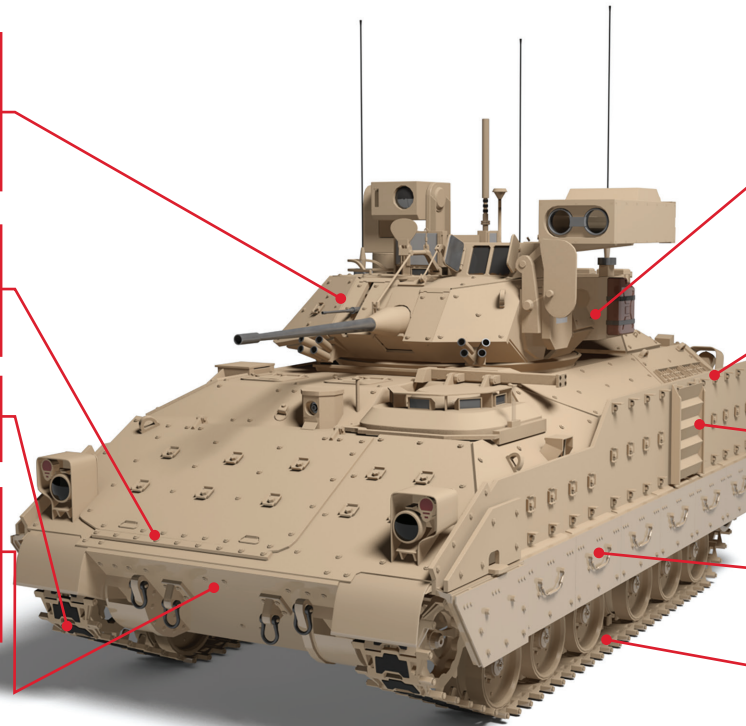
- Limit switch
- Proximity sensor
- Sealed switch
- Toggle switch

### Brake System

- Pressure switch
- Pressure sensor

### Vehicle Position/Tilt

- Hall-effect position sensor
- Inertial measurement unit
- Limit switch



### Weapons Systems

- Limit switch
- Precision thermostat
- Resolver
- Sealed switch
- Proximity sensor

### Engine, Fuel and Transmission

- Precision thermostat
- Pressure sensor
- Pressure switch
- Speed sensor
- Temperature probe

### Cabin

- Basic switch
- Gas sensor (Health)
- Particle sensor (Health)
- Temperature sensor

### Hydraulic Systems

- Pressure switch
- Pressure sensor
- Temperature probe

### Wheels/Tracks and Suspension

- Speed sensor

|                                 | Aero sealed switch | Aero prox platform | Aero rotary position | Rotary position | Pressure switches | Toggles & rockers | Speed sensors | Thermal switches | Basic switches | Pressure sensors | Gas sensors | Oxygen sensor | Air quality monitors | Board mount pressure sensors | Board mount force sensors | Motor control (Magnetics) | IMU |
|---------------------------------|--------------------|--------------------|----------------------|-----------------|-------------------|-------------------|---------------|------------------|----------------|------------------|-------------|---------------|----------------------|------------------------------|---------------------------|---------------------------|-----|
| Door & hatch locking detection  | ✓                  | ✓                  |                      | ✓               |                   | ✓                 |               |                  |                |                  |             |               |                      |                              |                           |                           |     |
| Hydraulic brake systems         |                    |                    |                      |                 | ✓                 |                   |               |                  |                | ✓                |             |               |                      |                              |                           |                           |     |
| Vehicle level                   |                    |                    |                      |                 |                   |                   |               |                  |                |                  |             |               |                      |                              |                           |                           | ✓   |
| Steering & controls             |                    |                    |                      |                 |                   | ✓                 |               |                  | ✓              |                  |             |               |                      |                              |                           |                           |     |
| Turret/sighting control systems | ✓                  | ✓                  | ✓                    | ✓               |                   |                   |               |                  |                |                  |             |               |                      |                              |                           |                           |     |
| Engine management               |                    |                    | ✓                    |                 | ✓                 |                   | ✓             |                  |                | ✓                |             |               |                      |                              |                           |                           |     |
| Cabin ventilation systems       | ✓                  |                    |                      |                 |                   |                   |               | ✓                | ✓              |                  | ✓           | ✓             | ✓                    | ✓                            | ✓                         |                           |     |
| Gearbox engagement & override   |                    |                    |                      |                 | ✓                 |                   |               |                  |                | ✓                |             |               |                      |                              |                           |                           |     |
| Steering/track drive            |                    |                    |                      | ✓               |                   |                   | ✓             |                  |                |                  |             |               |                      |                              |                           |                           |     |
| Crew monitoring                 |                    |                    |                      |                 |                   |                   |               |                  |                |                  | ✓           | ✓             |                      | ✓                            |                           | ✓                         |     |

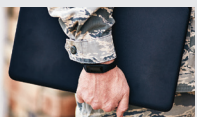
## MACHINE FUNCTION AND PERFORMANCE

| Application                 |                                                                                   | Growth Factor                                                                     | Primary Products                                                                                                                                            | Secondary Products                                                        |
|-----------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Wheel tracks and suspension |  | Design enhancement to improve efficiency of track wear and performance            | <ul style="list-style-type: none"> <li>Speed sensors</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>Transportation position</li> </ul> |
| Engine management           |  | Implementation of means to monitor and control engine operation and performance   | <ul style="list-style-type: none"> <li>Pressure switches</li> <li>Pressure sensors</li> <li>Speed sensors</li> </ul>                                        | <ul style="list-style-type: none"> <li>RVDT/LVDT sensors</li> </ul>       |
| Gear box                    |  | Development of improved efficiency of gearbox transmissions                       | <ul style="list-style-type: none"> <li>Pressure switches</li> <li>Pressure sensors</li> </ul>                                                               | <ul style="list-style-type: none"> <li>AMR magnetic IC</li> </ul>         |
| Weapons system              |  | Increasing sophistication of systems to control and monitor multiple input points | <ul style="list-style-type: none"> <li>Aero sealed switches</li> <li>Aero prox platform</li> <li>Transportation position</li> <li>Basic switches</li> </ul> | <ul style="list-style-type: none"> <li>Rotary position</li> </ul>         |

## GROUND VEHICLES – ACCESS AND SAFETY

| Application |                                                                                    | Growth Factor                                                                                                                              | Primary Products                                                                                                                                                                     | Secondary Products                                                                                                                                 |
|-------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Doors       |   | Increased focus on hermetically sealed doors for vehicles used in terrains at higher altitudes and risk of external atmospheric conditions | <ul style="list-style-type: none"> <li>Aero sealed switches</li> <li>Aero prox platform</li> <li>Transportation position</li> <li>Basic switches</li> <li>Pressure sensor</li> </ul> | <ul style="list-style-type: none"> <li>Toggle switches</li> </ul>                                                                                  |
| Cabin       |  | Growth on connected systems for smaller lower cost oxygen concentrators for air management control                                         | <ul style="list-style-type: none"> <li>Board mount pressure sensors</li> <li>Airflow sensors</li> <li>Oxygen sensors</li> <li>Particle sensors</li> </ul>                            | <ul style="list-style-type: none"> <li>Thermal switches and sensors</li> <li>Aero sealed switches</li> <li>Toggle &amp; rocker switches</li> </ul> |

## GROUND VEHICLES – REMOTE HEALTH MONITOR

| Application     |                                                                                     | Growth Factor                                                                                                         | Primary Products                                                               | Secondary Products                                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Crew monitoring |  | Integrated health monitoring by smaller portable or wearable systems that allow crew members to be monitored remotely | <ul style="list-style-type: none"> <li>Board mount pressure sensors</li> </ul> | <ul style="list-style-type: none"> <li>Humidity &amp; temperature sensors</li> <li>Magnetic sensors</li> <li>Particle sensor</li> <li>Barcode scanner</li> </ul> |

### WARRANTY/REMEDY

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