

KVH TACNAV:

Gain the Advantage –

Improving Mission Logistics & Operational Efficiencies

In the field and in military tests, KVH TACNAV systems have been shown to provide vehicle commanders, crews, and force commanders with clear advantages in the conduct of their operations. During U.S. Army tests at Ft. Bliss, vehicles equipped with KVH digital compasses proved to be:

- **57% more accurate when reaching checkpoints**
Advantage: *Massing firepower at the right place and the right time*
- **64% faster when reaching checkpoints at night**
Advantage: *Dominant maneuvers*
- **78% better at directional accuracy**
Advantage: *Use less fuel while travelling shorter distances*
- **100% faster in the rate of movement during the day**
Advantage: *More difficult for the enemy to react*

The End Result:

TACNAV facilitates higher OPtempo, precise maneuverability allows for greater cost savings

TACNAV – Integrating Every Vehicle within the Digital Battlefield

With the advent of digital Battle Management Systems (BMS), every vehicle in the fleet can now serve as a source of vital, real-time information for the force commander and every other unit in the field. The TACNAV family is the tool that makes this possible by offering an affordable link to the BMS for every type of vehicle, from utility units to main battle tanks. TACNAV brings together vehicle location and azimuth, far-target location, and turret angle into a single fully digital data stream capable of interfacing with any digital BMS. Most importantly, TACNAV ensures that this critical information is always available, regardless of GPS jamming or natural interference. By offering 100 percent availability of vehicle data, TACNAV provides uninterrupted situational awareness for the entire digital battlefield, keeping every vehicle on-line all of the time.

More than 7,000 navigation systems fielded worldwide

Platforms

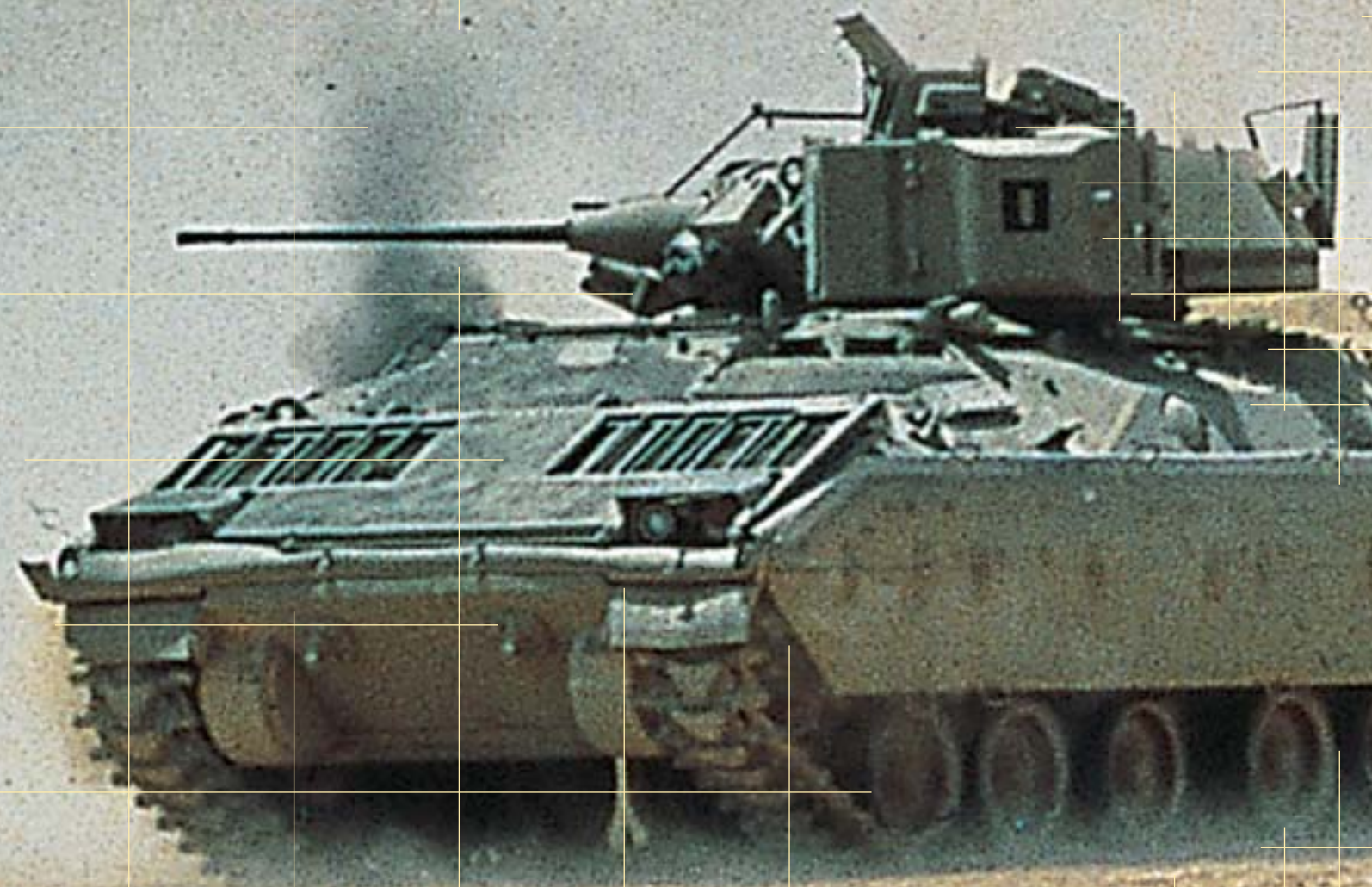
BRADLEY ODS, LINEBACKER, A3
U.S. MARINE CORPS AAV
U.S. MARINE CORPS LAV
CANADIAN RECCE, LAV
CANADIAN APC, LAV
AUSTRALIAN LAV
NEW ZEALAND LAV
SWEDISH FMV CV90
U.K. SCIMITAR
MIDDLE EAST LAV
MIDDLE EAST M-113
PROFIT GROUND ARMOUR
SPECIAL FORCES LAV/ARMOUR

Digital Battlefield Management Systems

U.S. FBCB2
TACOM/TRW TASK FORCE 21 APPLIQUE
U.K. BGBMS
FRENCH BMS (CIT VI)
CANADIAN ARMY DIGITAL BATTLEFIELD
SWEDISH ARMY DIGITAL BATTLEFIELD



Operational Concepts



KVHI

Keeping Track of Your World



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Mission Scenario:

TACNAV in the Field

An International Peacekeeping and Border Control Mission

0200 hrs:

An armored reconnaissance team learns of a possible border violation and is ordered to deploy to its designated battle position. The driver checks his TACNAV Steer-to display for distance and direction to his destination. The vehicle commander confirms the information on his Navigation Display and orders the vehicle to move out. Confident that the driver is on course, the commander receives the SITREP and plans his course of action. At the same time, Headquarters is tracking the vehicle's position and direction at all times via TACNAV's interface to the digital battle management system (BMS).

0225 hrs:

The vehicle arrives at its battle position, where the driver switches to Compass Mode and steers the vehicle into its assigned heading. The commander enters Turret Mode to ensure that the gunner is scanning the assigned range sector.

0245 hrs:

The gunner identifies a target. However, the Turret Mode display tells the vehicle commander that the turret is outside the assigned range fan and pointing into the neighboring friendly unit's battle position. Using the Turret Mode and the commander's override, the commander shows the gunner the range fan limits again. Driver has the next waypoint information available and is ready to move out.

0312 hrs:

The commander notices that the GPS indicator in the lower right corner of the display now reads DR, indicating that TACNAV's dead reckon capability is active because GPS is unavailable, possibly as a result of GPS jamming. Moments later, the gunner identifies an OPFOR target within his range fan and activates his laser rangefinder. Although GPS is still unavailable, TACNAV automatically computes the target's precise position and relays the information via the BMS.

0331 hrs:

Headquarters confirms that a border violation is underway. Using the continuing target position provided by the armored reconnaissance team, the vehicle moves in and detains the OPFOR soldiers. With the completion of the mission, the vehicle is ordered back to base. Using the Steer-to display, the driver moves out and heads for home. En route, the dead reckon function shuts off automatically with the return of GPS.

After Action Report:

The mission was completed safely and efficiently. Using the TACNAV system:

- Situational awareness (SA) was maintained at all times, at night, in unfamiliar terrain, all despite the loss of GPS due to possible jamming;
- A possible fratricide was prevented; and
- Headquarters remained aware of the vehicle's position, the angle of its weapons, and the location of the OPFOR target at all times.



TACNAV – Displaying Critical Data

One of TACNAV's greatest assets is the versatility of its displays. With both a Commander's and Driver's configuration, vehicle personnel can receive the information vital to their safety and the success of their mission.

Commander's Display

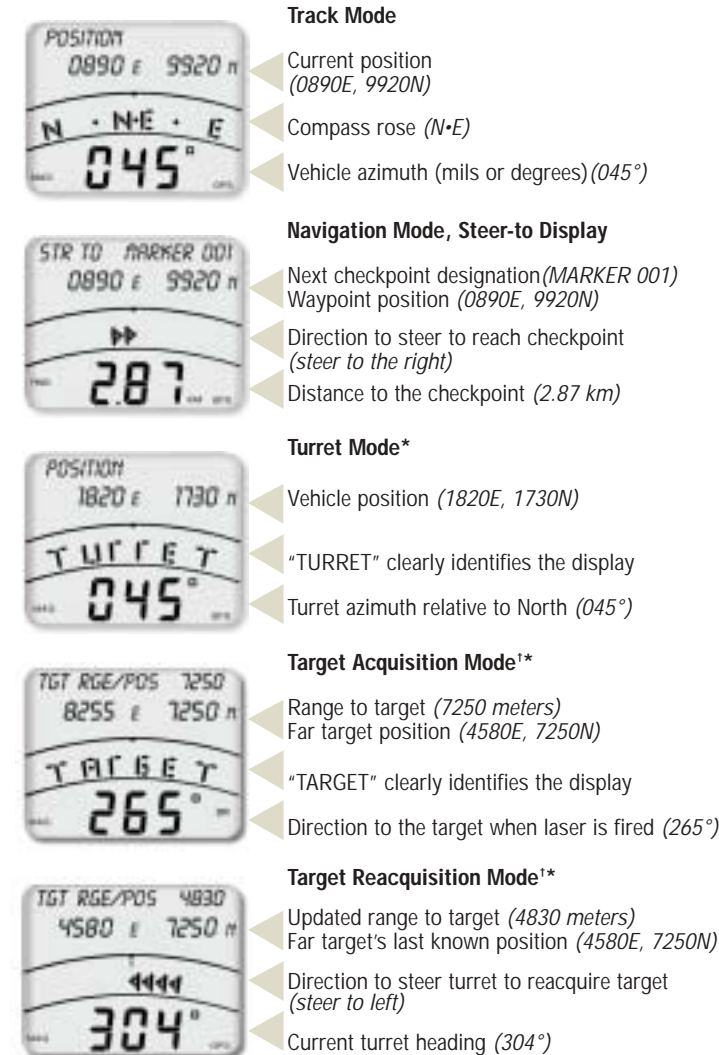


High-resolution LCD displays receive and interpret track and position data and provide steer-to reference. Simple controls enable the operator to select the type of data to be displayed, and adjust the night vision-compatible backlight. The Commander's Display also features detailed alphanumeric grid coordinates and messages while providing navigation and target acquisition data.

Physical: 12.7 cm(l) x 13.5 cm(w) x 6.1 cm(h)
(5.0" x 5.3" x 2.4")

Weight: 88 kg (1.9 lbs) nominal

Driver's Display



Track Mode

- Current position (0890E, 9920N)
- Compass rose (N-E)
- Vehicle azimuth (mils or degrees) (045°)

Navigation Mode, Steer-to Display

- Next checkpoint designation (MARKER 001)
- Waypoint position (0890E, 9920N)
- Direction to steer to reach checkpoint (steer to the right)
- Distance to the checkpoint (2.87 km)

Turret Mode*

- Vehicle position (1820E, 1730N)
- "TURRET" clearly identifies the display
- Turret azimuth relative to North (045°)

Target Acquisition Mode!*

- Range to target (7250 meters)
- Far target position (4580E, 7250N)
- "TARGET" clearly identifies the display
- Direction to the target when laser is fired (265°)

Target Reacquisition Mode!*

- Updated range to target (4830 meters)
- Far target's last known position (4580E, 7250N)
- Direction to steer turret to reacquire target (steer to left)
- Current turret heading (304°)

Compass Mode

- Compass rose (N-E)
- Vehicle azimuth (mils or degrees) (045°)

Off-Course Display Mode

- Direction to resume course (steer to the right)
- Vehicle azimuth (mils or degrees) (135°)

Steer-to Mode

- Magnitude and direction to steer (steer to the right)
- Compass rose (E)
- Distance to checkpoint (2.87 km)

Cross Track Error Mode (XTE)

- Cross track error and direction to track line (.04 km/to the right)
- Compass rose (E)
- Distance to checkpoint (2.87 km)

* When interfaced with a turret angle encoder
† When interfaced with a laser rangefinder