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RIFLE INPUT CONTROL

A new interface technology for controlling soldier systems

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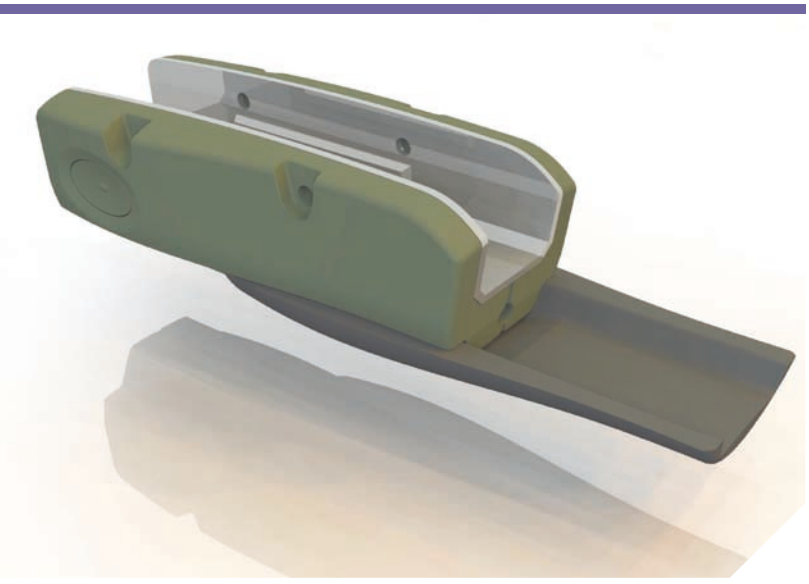
RIFLE INPUT CONTROL

>> A NEW INTERFACE TECHNOLOGY FOR CONTROLLING SOLDIER SYSTEMS

Today's soldier is required to operate a number of electronic devices – each with their own separate and different controls. But how does he do this without taking his hand off the weapon and his eyes off the task?

To overcome this problem, Thales Australia and Kord Defence have jointly developed a weapon mounted, push-button, controller called the Rifle Input Control (RIC). The controller has been designed to provide fast access and control of a range of devices from the weapon; with one hand and eyes-free.



RIFLE INPUT CONTROL PROTOTYPE

The RIC is a five-button controller that attaches to the front of the rifle. The soldier presses single or multiple buttons (called chords) to operate it. Small on screen symbols show which buttons to press. Initially, the symbols guide the soldier (which is useful for training purposes) but after a relatively short time the soldier remembers the combinations (from muscle memory) and the interface can be operated 'eyes free'. Audio and voice prompting can be used to enhance this capability.

Typically it takes only a few minutes to understand how to operate the device. The RIC is digital (there is no moving cursor or pointer) it is not affected by ambient vibration or movement – consequently it can be used in the most arduous of conditions. It can also be operated covertly since little movement or noise is involved.

The RIC contains a small programmable microprocessor for interfacing to a range of electronic devices including thermal weapon sights, infra-red sensors, night aiming devices, laser range finders, radios,

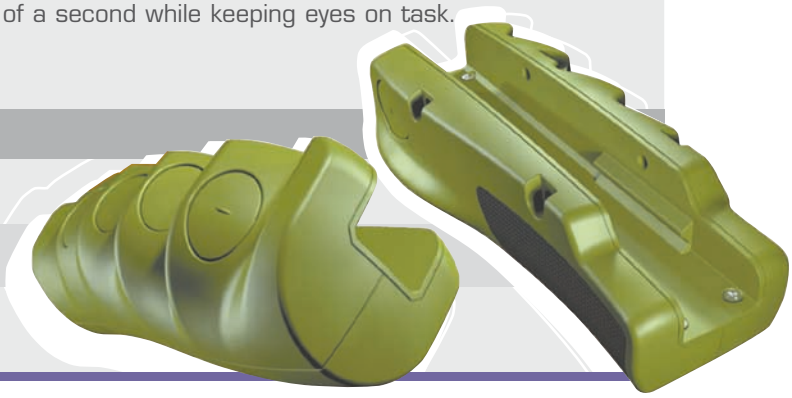
PERFORMANCE

Laboratory trials undertaken at the University of Canberra in August 2006 showed the RIC significantly outperformed touch screens and up/down/select systems. The RIC was found to be much more accurate and at least 50% faster. Most importantly, users were able to operate the RIC virtually eyes-free (less than 1% head-down time), whereas the touch screen required the user to spend over half of the time with their head down.

Using the RIC would have significant operational benefits for the soldier including greatly increased situational awareness.

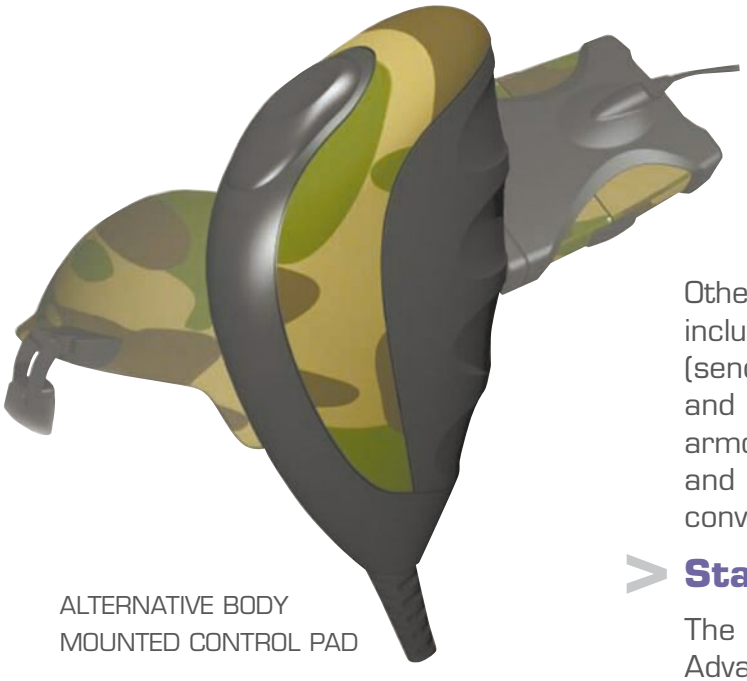
Tests undertaken in March 2007 determined the ease of performance of the 31 possible chord combinations. Results indicate that 14 chords were easy to perform and seven were difficult. The easiest chord (the thumb) was three times faster to complete than the hardest chord. This demonstrates that with minimal training and by using the easier chords, the RIC will enable users to access and control devices routinely within fractions of a second while keeping eyes on task.

Device	Accuracy	Head up	Speed
RIC	92.8%	>99.0%	1.0 sec
Touch	74.1%	46.3%	1.6 sec
UDS	68.8%	73.8%	2.1 sec



> Key features

- Ergonomic rugged casing (production versions waterproof - IP67 rated)
- Can be used with gloves
- Can be operated from any position, even in firing position
- Light weight (120 - 150 g)
- Left or right handed versions available
- Flexible and easy attachment
- Programmable microprocessor with mode selection
- Can control most electronic devices (via conventional ports)
- Scaleable interface – from three to five buttons (or more)
- Wired or wireless (low power secure RF signal)
- Long battery life – up to three years.



ALTERNATIVE BODY
MOUNTED CONTROL PAD

> Applications

Although designed as an integrated controller for soldier combat systems, the RIC also has application for special forces, commandos and anti terrorist police. Whilst it is designed to fit the Austeyr Rifle it can be adapted to fit other weapons including the M4 carbine, MP-5 SMG and M16. Depending on the final configuration and design, fitting of the RIC will involve a simple modification performed by the operator either in the field or back at base. It can also be used to control electronics on a sniper's rifle or for sending pre formatted Battle Management System (BMS) messages covertly.

Variations of the RIC can be adapted to fit to steering wheels for in-vehicle controls for use by special forces assault, anti terrorist police, intelligence surveillance and VIP - diplomatic vehicles.

Body-worn versions can be used for fast access and control of specific subsystems, such as the radio or the BMS.

Other potential military applications include: fire control observation (sending of pre formatted information) and rapid control of electronics in armored vehicles (where vibration and noise preclude the use of more conventional interfaces).

> Status

The RIC is in prototype form. Advanced models, with improved ergonomics and functionality, are being developed and will be connected to a range of electronic devices including thermal weapon sight, radio, night aiming device and white light torch. They will undergo performance testing both in the laboratory and in the field during 2007. Fully programmable and ruggedised (IP67) pre-production units are expected to be available by mid 2008. Users will be provided with configuration tools so that the RIC's firmware can be upgraded as new devices are added. This will include audio prompting (via the soldier's earpiece) for complete "eyes-free" control. A universal mounting is under development to enable the RIC to be integrated into other weapon systems.

The core of the technology, the Chordic Graphical User Interface (CGUI), is protected globally by patents (US05900864). The interface technology (originally developed at the Australian Institute of Marine Science) is now being used to control the Australian Navy's Mine Warfare Underwater Combat Systems (MUCS).

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