OBJECTIVE: Design, develop and demonstrate a digital touch display that is capable of operating at very low temperatures and has minimal input power requirements.

DESCRIPTION: Small ruggedized electronic devices have been and are being developed for use by the warfighter and will play a critical role in most of the CFT capabilities to be fielded. Further these displays will be required to allow artificial, machine learning and the Internet of the Battlefield to enhance the warfighter and become a reality. These devices need to have the capability to operate in a wide range of environments and temperatures. Temperature range shall be described for this SBIR as 60°C to -40°C for operating and 71°C to -40°C for storage. Along with operating in server environments the warfighter is always looking to reduce the weight of his equipment and the length of time that the equipment can operate before batteries need to be replaced. Because of this the equipment being developed is looking for components that have minimal power needs and do not use heaters to achieve low temperature requirements. Minimal power consumption shall be described for this SBIR as a maximum of 10mW. This SBIR focuses on common displays that are used on these devices. A common display is described with (but not limited to) the following features: night readable, allow touch screen interface, 4K resolution, minimum 5 inch diagonal screen, capable of displaying common charter set at 18-Font, monochrome, readable from distance of 2 feet. The technology being developed should look to be scalable to match current displays on the market.

PHASE I: Investigate innovative approaches to develop displays to meet the topic requirements. Develop and document the overall component design and accompanying software interfaces.

PHASE II: Develop and demonstrate a prototype that can operate while meeting the above requirements.

PHASE III DUAL-USE APPLICATIONS: Develop and demonstrate the technology developed in Phase II that is capable of being inserted into an existing ARDEC supplied system. Conduct testing to demonstrate feasibility of the component for operation within a simulation environment, and with actual fielded hardware.

REFERENCES:
1. pmmortars.army.mil/pmmortars/Products/lhmbc
2. asc.army.mil/web/portfolio-item/soldier-nw
3. asc.army.mil/web/portfolio-item/mortar-systems
4. M777/M119 Howitzer

KEYWORDS: Display, Low, Temperature, Power, Electronic, Device, LCD, OLED, LED, Vacuum, Florescent, E-paper