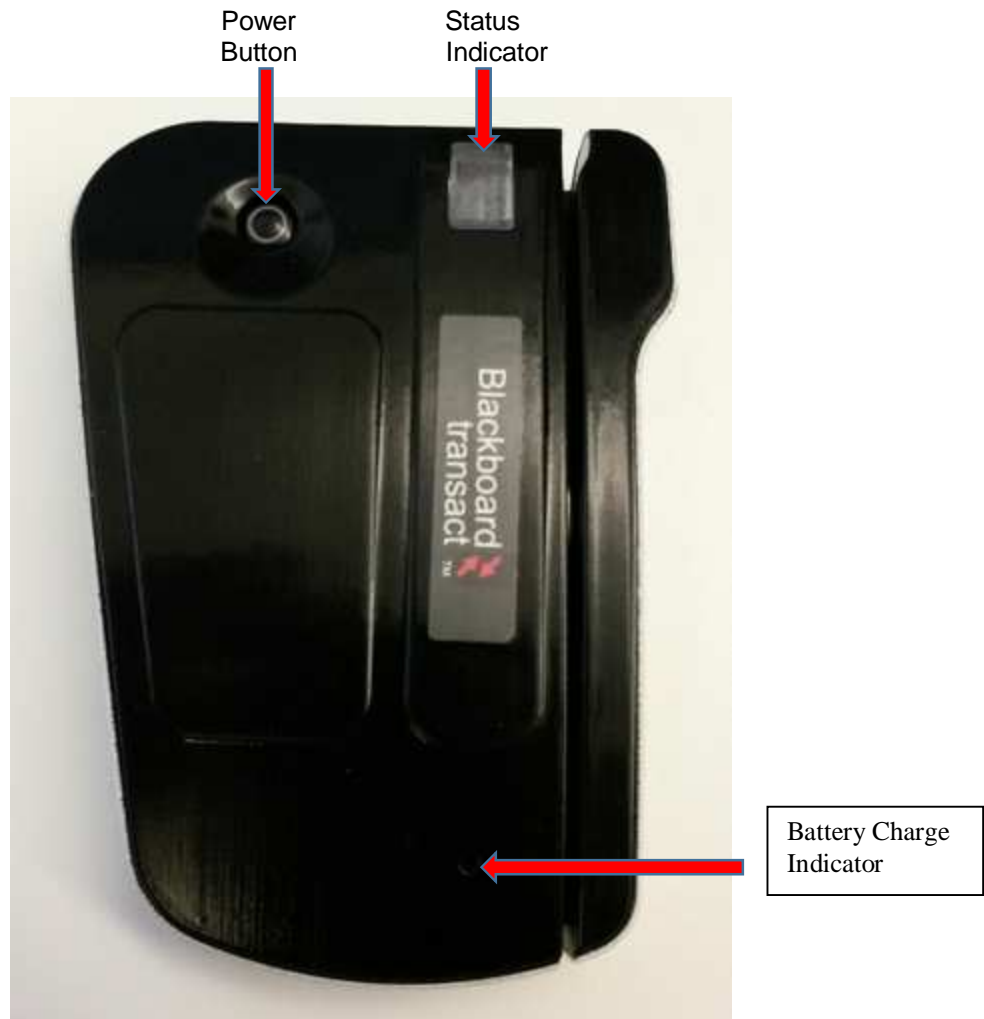


Blackboard MRD5 User Manual

The Blackboard model MRD5, is a Mobile Reader Device for reading Blackboard mag-stripe and contactless cards. A card-swipe allows reading of mag-stripe cards and an internal antenna provides the capability to read Near-Field Communication (NFC) credentials. It operates as a peripheral device to a host such as a smart phone or tablet with communication being provided over USB or Bluetooth Low Energy (BLE). When a Blackboard credential is read, the information on the credential is then transferred to the host device. Application software must be installed on the host device to work with the MRD5.

The MRD5 has a card-swipe for reading mag-stripe cards. An internal antenna provides Near-Field Communication (NFC) to allow reading contactless cards and NFC type credentials. A switch controls when the device is powered on or off, and a chargeable Lithium-Ion battery provides up to 40 hours of continuous operation.

The figure below shows the controls and status indicators.



Power Button

The Power button controls when the MRD5 turned on or off. When on, the Power button is illuminated green.

To turn the device ON - Press and hold the Power button for at least 2 seconds. The Status indicator will be yellow while pressed and after 2 seconds will turn green followed by an ascending audio tone.

To turn the device OFF - Press and hold the Power button for at least 2 seconds. The Status indicator will be yellow while pressed and after 2 seconds and then turn off with a descending audio tone.

If the MRD5 is not being used for an extended period of time, turn the device off to save battery power.

If the MRD5 appears to stop working and the unit fails to turn off after 2 seconds, a hardware power down must be performed by depressing and holding the power switch down for more than 12 seconds.

Charging the Battery

A USB Power Adapter is not provided with the MRD5 Mobile Reader. Any USB Power Adapter with a minimum 5 Watt rating that complies with local regulatory Safety requirements can be used.

To charge the MRD5 battery:

- Connect the Mobile Reader to a USB Power Adapter using the included cable.
- Plug the USB Power Adapter in to a power outlet.

The charger status LED indicates the state of the charge process. Note, the indicator is only on when a power source has been plugged in to the USB connector.

- Yellow – Charger voltage is within limits and battery is being charged.
- Green – battery is fully charged. Charger can be disconnected from Reader.
- Red – Charger voltage is not within limits for charging battery.

Some USB 2.0 ports and accessories do not provide enough power to charge the MRD5. When this occurs, the charge indicator may be red or not turned on.

If the Mobile Reader is left turned on during charging, it will take longer to charge. If the battery has been completely discharged, it may require an additional hour to charge.

Status Indicator

The status indicator is used to identify different states of the reader.

When the MRD5 is turned on, it will advertise over BLE and/or USB. A host device, such as a phone or tablet with the BLE Application can then be launched. When the Application connects to the MRD5 over BLE, the Status LED displays Blue for 1 second and emits a short tone.

When a mag-stripe card is swiped the Status LED blinks green and a short tone is emitted. If an error occurs on a mag-stripe read, the Status LED will blink red and it emits a short descending tone.

When a contactless card is presented the Status LED blinks green and a short tone is emitted.

BLE and USB communication

For USB communication, the MRD5 connects to a host as a Human Interface Device (HID) and can send keyboard reports (i.e. keyboard emulation) and/or send/receive vendor-specific custom reports. Because it connects as an HID device, no device drivers need to be installed on the host computer.

For BLE communication, the MRD5 uses private GATT profiles developed by Microchip specifically for use with their RN4020 BLE module (used in the MRD5). This BLE profile is called MLDP for Microchip Low-energy Data Profile and is used to transfer ASCII data bi-directionally between the MRD5 and the host device (i.e. a smartphone or tablet).

Press and release the Power button 3 times within 2 seconds to clear BLE bonding information (so it will start undirected advertising again).

Configuring the MRD5

The default mode of operation for the MRD5 is to read mag-stripe cards and poll, authenticate and read Blackboard contactless credentials. The track 2 data read from the card will be sent to the host device (over BLE, USB keyboard and/or USB custom reports) parsed and formatted as defined by the MRD5 configuration. A MRD5 Config Utility can be used to configure how to parse and format the card read output. It also allows customizing audio sounds and LED status colors. The MRD5Config software utility is available for download at <https://behind.blackboard.com>.

Operating Specifications

Dimensions:	104mm x 76mm x 25mm (4.1" x 3.0" x 1")
Weight:	91 grams (3.2 ounces)
Operating Temperature:	-20 °C to 60 °C (-4 °F to 140 °F)
Storage Temperature:	-20 °C to 45 °C (-4 °F to 113 °F)
Energy:	3.4Wh
Typical Charging Current:	500 mA

FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada statement

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Battery Replacement and Disposal

The rechargeable battery in the MRD5 should be replaced only by a Blackboard Authorized Service Provider. For battery replacement services, contact Blackboard to open a RMA.

When the Mobile Reader reaches its end of life, contact local authorities to learn about disposal and recycling options.