**Warning!**

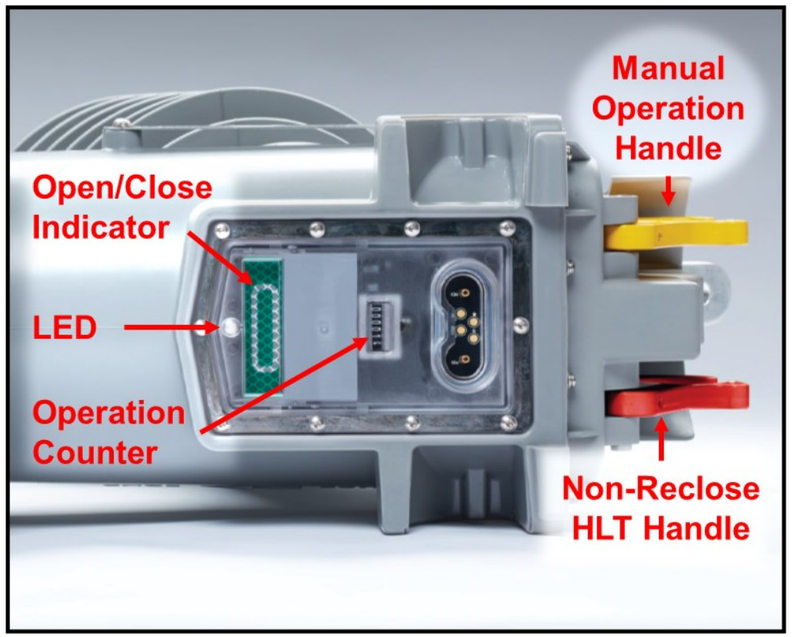
This guide is intended to be a quick field reference but should not replace adequate training and safety procedures for the CMR. Personnel who interface with CMRs in the field should have completed the CMR MyLearning module. This guide is not intended to supersede any established methods and procedures.

# CMR Quick Reference Guide

## CMR Overview:

The image below shows all the control handles and visual aids on the CMR.

- Open/Close Indicator | **Green = Open** | **Red = Closed**
- LED Light | Blinks to provide CMR indication
- Operations Counter | Counts interrupter operations
- Manual Operation Handle | Pull down to open and lockout the recloser. Push handle up to close the recloser.
- Non-Reclose / HLT Handle | Pull down to apply non-reclose/ HLT protection. Push up to return to normal protection.




**NOTE: CMR WILL NOT CLOSE WITH RED HANDLE DOWN**

One-shot protection is automatically applied for a short time when closing the CMR. Red handle must be up when manually closing the CMR.

## Hot Line Tag:

To place the CMR in non-reclose or hot line tag (HLT) mode, pull down the **RED** Handle. When the red handle is pulled down, the CMR LED light will blink indicating it has accepted the command and is in non-reclose/HLT mode.


Once energized line work has been completed, return the **RED** Handle to the upright position. The LED should again blink indicating it has accepted the command and has returned to normal protection mode.

If the CMR is connected to an RCU and has SCADA communications, non-reclose/HLT can be applied and removed remotely. Contact the DCC for assistance and follow all applicable switching and tagging guidance.

## CMR LED Indication and Blink Codes:

The CMR has a red LED light on the bottom for indication and user feedback. This LED is capable of short and long-term blink patterns.

- Short-term—A blink pattern of fixed duration and sequence to indicate an action has occurred.
- Long-term—A blink pattern that continues indefinitely until a task is completed.

### Short-Term Blink Codes:

| Cause of Blink | Blink Sequence |
|---|---|
| Battery module connected | 2 short blinks for battery connection confirmed |
| Flash LED (Identify Unit) | Double blink with 0.75 s delay between double blinks. Repeated 10 times. |
| Red handle position change | 10 standard blinks with 0.5 s delay |

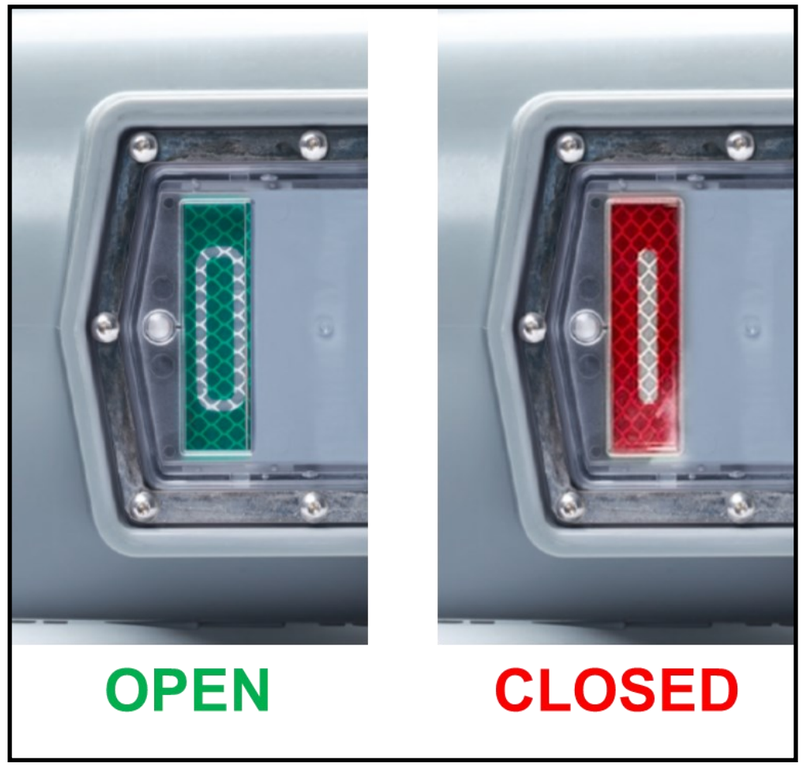
### Long-Term Blink Codes:

| Cause of Blink | Blink Sequence |
|---|---|
| Manual close pending | 1 standard blink per second for duration of manual close delay |
| Data transfer in progress (firmware, event log, configuration file) | Continuous flicker |
| Ant radio turned on by local user | 1 quick blink per second |
| Voltage power high | 4 bright blinks per second |
| Voltage power low | 2 dim blinks per second |
| Fault detected downstream | 1 standard blink every 5 s until reset or 24hr |
| Recloser in problem state | Repeating pattern of 3 short blinks followed by 3 long blinks to create a form of S-O-S signal. |

Note: A short-term blink will interrupt any active long-term blink pattern. Once the short-term blink is completed, the long-term blink pattern will resume if still valid.

## Responding to a CMR after a fault event:

- The CMR will indicate if it has sensed a fault whether or not it is locked out by blinking the LED once every 5 seconds for a maximum duration of 24 hours.
- If the CMR has locked out in response to a fault condition, the yellow handle will remain in the upright position. The yellow handle DOES NOT drop down for a lockout condition.
- Examine the position indicator on the bottom of the CMR to determine if it is open or closed as seen in the below image.




- To close the CMR after a lockout, the yellow handle must first be pulled down and can then be pushed up to close the CMR.
- **The CMR will not close with the red handle down.** One-shot protection is automatically applied for a short time when closing the CMR. Red handle must be up when manually closing the CMR.

## CMR Battery:

The CMR requires a healthy battery to be fully operational. The battery serves two functions:

- The battery powers the CMR in the event of loss of voltage on the source terminal. A healthy battery pack will power a CMR for a minimum of 72 hours for a loss of voltage condition.
- The battery assists in charging the trip and close capacitors during a reclose sequence.

**A healthy and charged battery module is required to close the CMR.**

Siemens indicates a battery life of 8 to 10 years. Battery life may vary based on temperature.

### CMR Battery Installation and Removal:

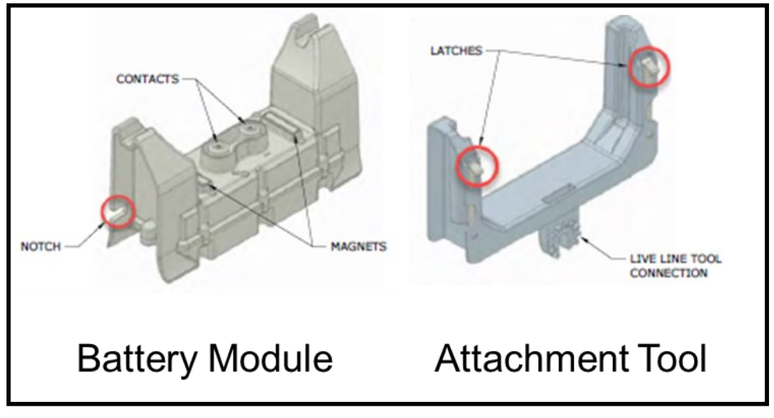
The battery module and battery module attachment tool are designed to fit together in one direction for installation and another direction for removal. The module has notches that can be aligned with latches in the attachment tool.

**Installation:**

Place the battery module into the attachment tool in the orientation that does not latch into the notches. Insert the battery module into the CMR. The LED will flash twice to confirm an adequately charged battery module has been connected.

**Removal:**

Rotate the attachment tool 180° from the orientation used for installing the battery module. Lift the attachment tool and insert it into the battery module. The attachment arms will latch into the notches. Pull down to remove the battery module.




## CMR Remote Control Unit (RCU):

The Siemens Remote Control Unit (RCU) can be added to a CMR installation to add SCADA and remote engineering access. A single RCU can be used for single, two, or three phase CMR installations.

The RCU includes a control panel for local controls without the need for a hot stick. The control panel can be used for the following functions:

- Select phases to control
- Trip and Close CMRs
- Blink phases for identification
- Change protection between auto reclose and HLT